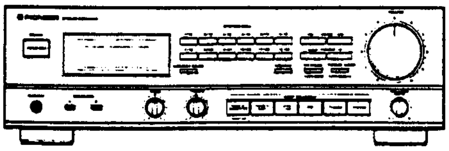
PIONEER
The future of sound and vision.

Service Manual



ORDER NO.
ARP1774

STEREO RECEIVER

SX-225

SX-225 HAS FOLLOWING VERSIONS:

Type	Power requirement	Export destination
HB	AC220, 240V (switchable) *	United Kingdom
HE	AC220, 240V (switchable) *	European continent
HEZ	AC220, 240V (switchable) *	West Germany
KUC	AC120V only	U.S.A. and Canada

* Change the lead wires of the transformer.

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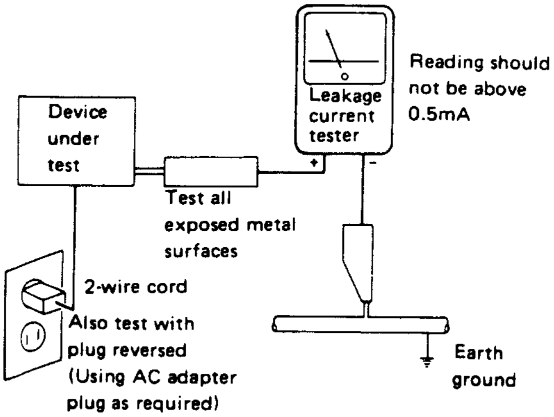
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
+
-
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ADVARSEL!

Lithiumbatteri. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

Denne advarsel or angivet på produktet eller i brugsvejledningen. Ved udskiftning af lithium batterierne følges nedenstående anveisning. Batterierne må kun udskiftes med batterier af samme type og mærke.

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

WARNING!

Lithium batteries. Danger of explosion. Replacement must be done by qualified personnel and only by following the instructions given in the service manual.

This warning is stated on the product or in the operating instructions. When replacing the lithium batteries, follow the note below.
The batteries must be replaced only by batteries of the same type and manufacture.

VAROITUS!

Litiumparistot. Räjähdysvaara. Vaihdon saa suorittaa ainoastaan asiantunteva huoltoteknikko noudattamalla huolto-ohjeessa annettuja ohjeita.

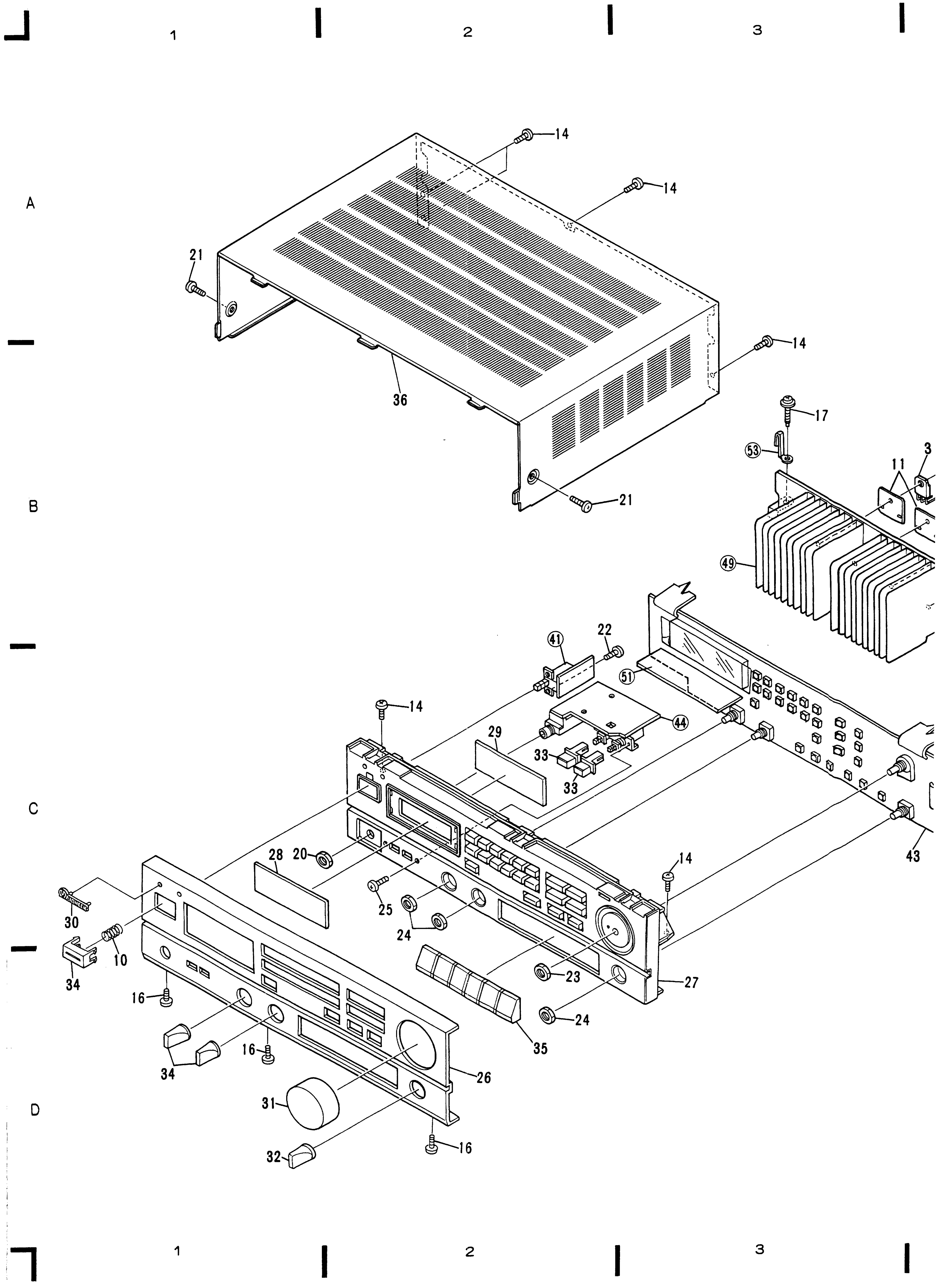
Tämä varoitus sijaitsee laitteessa tai käyttöohjeessa. Noudata litiumparistoja vaihtaessasi alla olevaa huomautusta.
Paristot on vaihdettava samantyyppisiin ja saman tehtaan valmistamiin paristoihin.

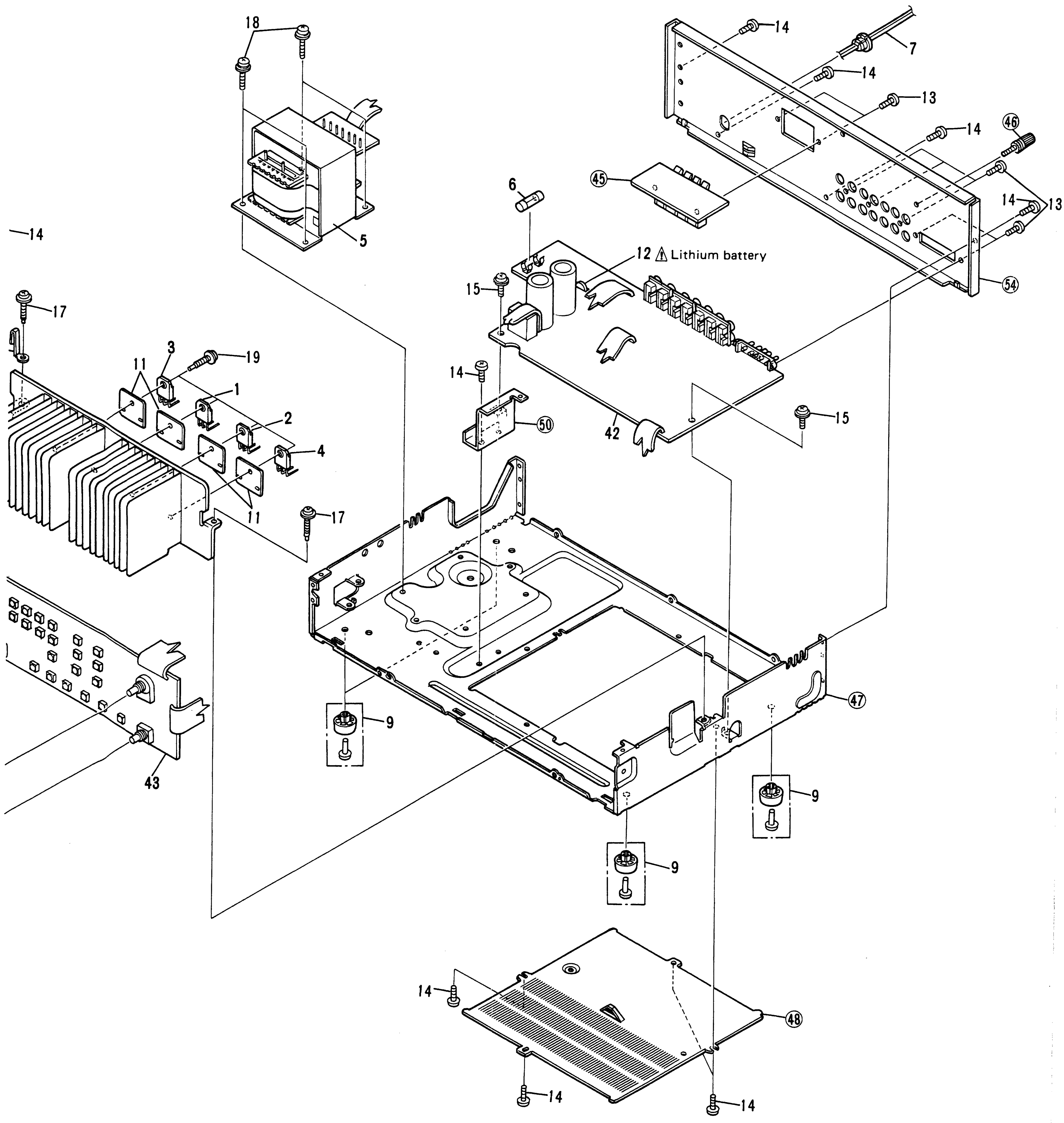
2. EXPLODED VIEWS, PACKING AND PARTS LIST

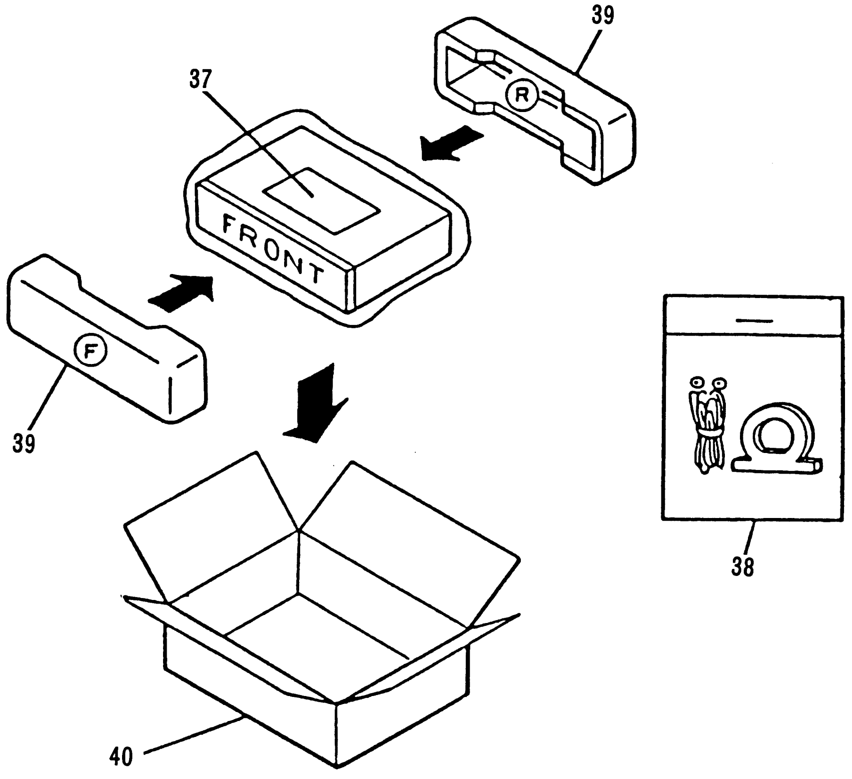
NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

PARTS LIST

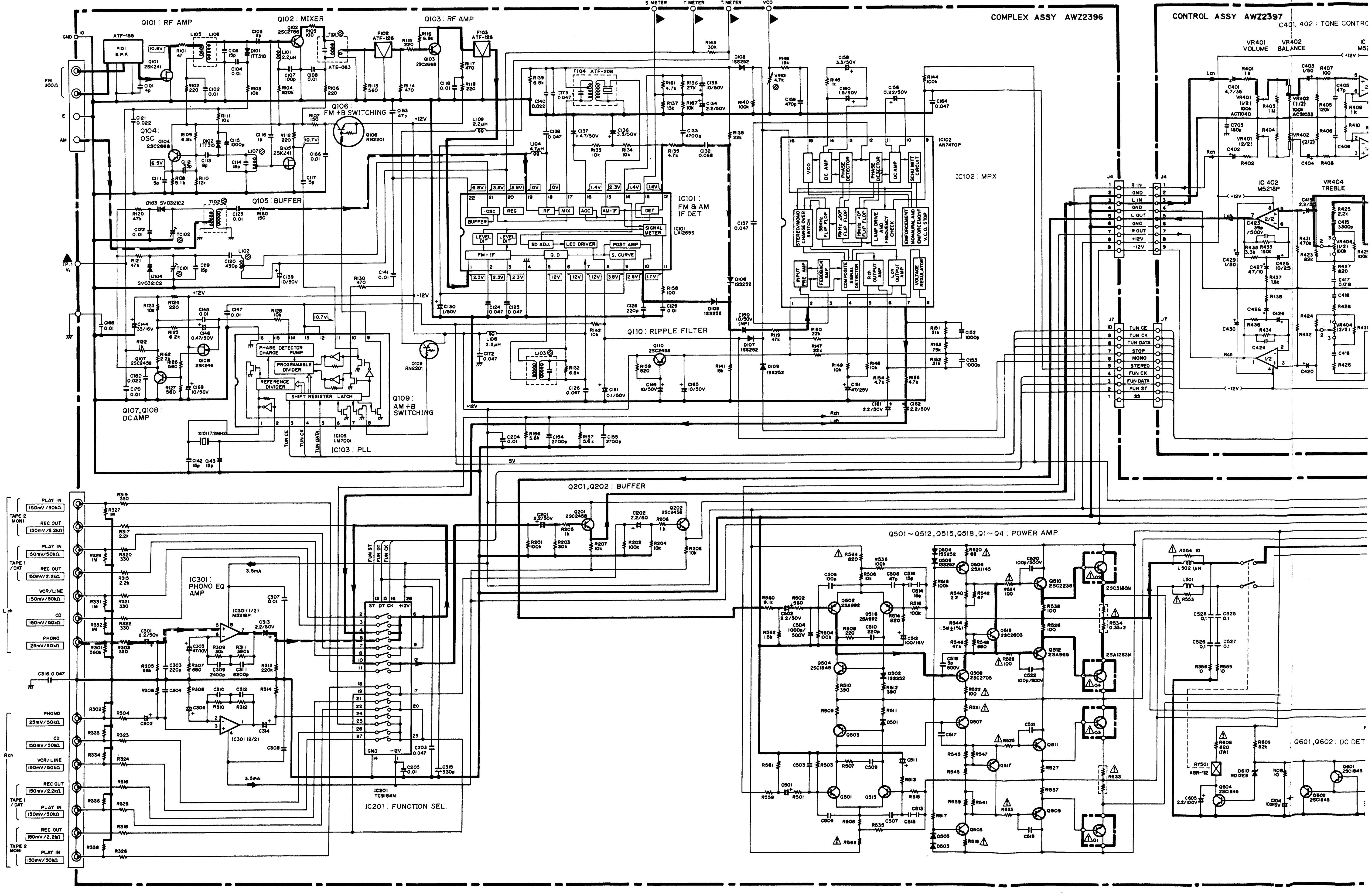
Mark	No.	Part No.	Description
⚠	1	2SA1263N	Transistor (Q3)
⚠	2	2SA1263N	Transistor (Q4)
⚠	3	2SC3180N	Transistor (Q1)
⚠	4	2SC3180N	Transistor (Q2)
⚠	5	ATS1119	Power transformer (T1)
⚠	6	AEK-509	Fuse (FU1)
⚠	7	ADG-063	AC power cord
	8	. . . . .	. . . . .
	9	AEC-784	Leg ASSY
	10	ABH-052	Coil spring B
	11	AEE1014	Sheet
⚠	12	AEX-008	Lithium battery (3V)
	13	ABA1006	Screw (3 x 8)
	14	ABA1009	Screw
	15	ABA1011	Screw
	16	ABA1048	Screw (3 x 6)
	17	ABA1052	Screw (3 x 12)
	18	ABA1054	Screw (3 x 10)
	19	ABA1082	Screw (3 x 14)
	20	ABN-065	Nut
	21	BBT30P060FZK	Screw
	22	CBZ30P080FMC	Screw
	23	NK70FUC	Nut
	24	NK90FUC	Nut
	25	VMZ30P060FMC	Screw
	26	ANB1273	Front panel
	27	AMB1460	Panel base
	28	AAK1673	Acrylic panel
	29	AAK1674	FL filter
	30	AAM1029	Name plate
	31	AAB1099	Knob (VOLUME)
	32	AAB1100	Rotary knob
	33	AAD-418	Push knob B
	34	AAD1535	Power knob
	35	AAD1539	Knob array
	36	AZN1783	Bonnet
	37	ARB1163	Operating instructions
	38	AEA1002	Antenna set
	39	AHA1015	Front rear pad
	40	AHD1607	Packing case
	41		POWER SW ASSY
	42	AWZ2396	COMPLEX ASSY
	43	AWZ2397	CONTROL ASSY
	44		SP SWITCH ASSY
	45		SP TERMINAL ASSY
	46		Terminal (GND)
	47		Chassis
	48		Bottom plate
	49		Heat sink
	50		Heat sink holder
	51		Shield plate
	52		. . . . .
	53		Binder
	54		Rear panel

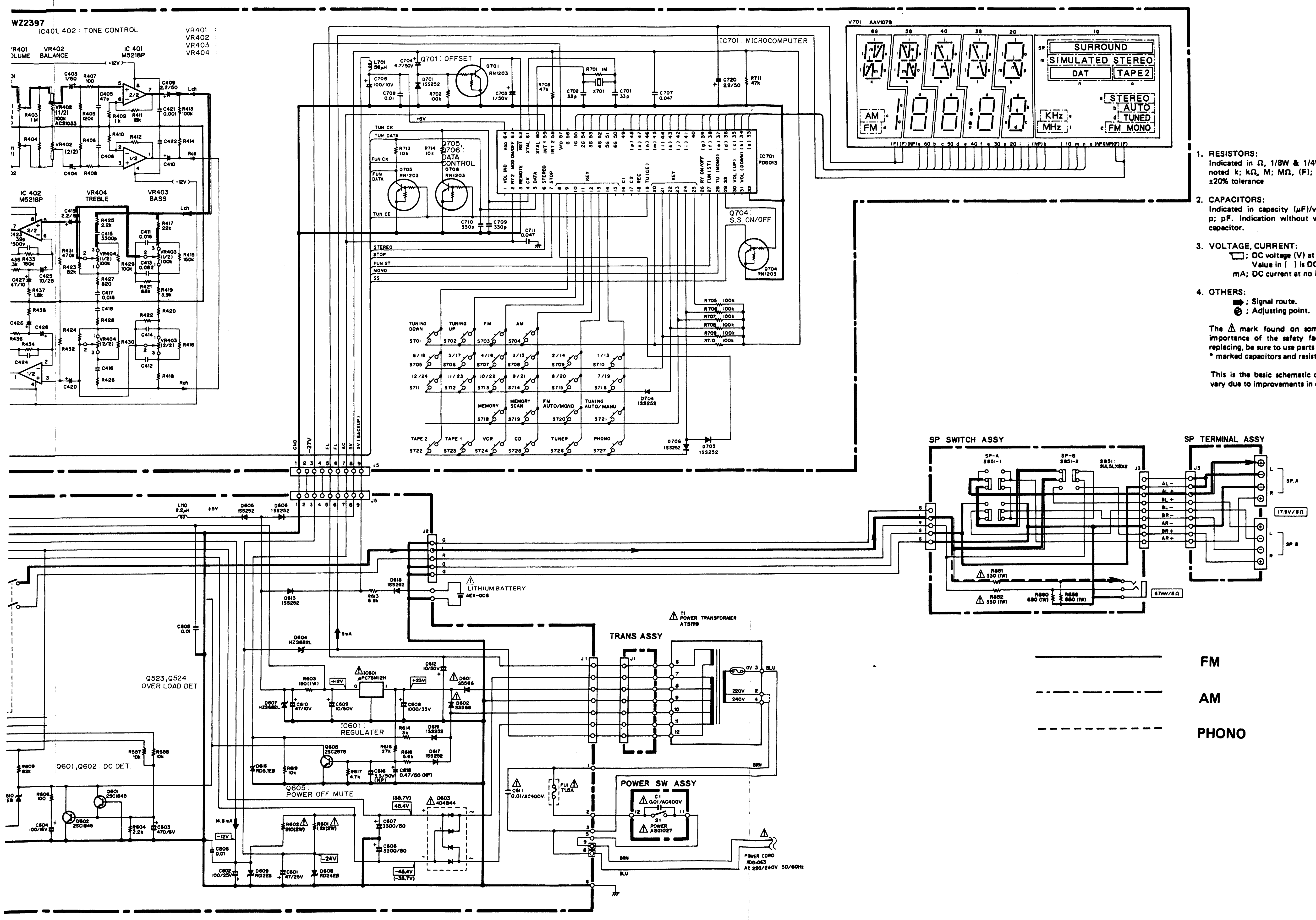



A
B
C
D
㊻
㊺
12 ⚠ Lithium battery
㊹
㊿
㊼
㊽


FRONT
R
F

3. SCHEMATIC DIAGRAM


COMPLEX ASSY AWZ2396
CONTROL ASSY AWZ2397
Q101 : RF AMP
Q102 : MIXER
Q103 : RF AMP
Q104 : OSC
Q105 : BUFFER
Q106 : FM +B SWITCHING
Q107,Q108 : DC AMP
Q109 : AM +B SWITCHING
Q110 : RIPPLE FILTER
IC101 : FM & AM IF DET.
IC101 LA1265S
IC102 : MPX
IC102 AN7470P
IC103 : PLL
IC103 LM7001
Q201,Q202 : BUFFER
IC301 : PHONO EQ AMP
IC301(1/2) M5218P
IC301 (2/2)
IC201 : FUNCTION SEL.
IC201 TC9164N
Q501~Q512,Q515,Q518,Q1~Q4 : POWER AMP
Q601,Q602 : DC DET
IC401, 402 : TONE CONTROL
IC 402 M5218P
VR401 VOLUME
VR402 BALANCE
VR404 TREBLE
TP.2 S.METER
TP.3 T.METER
TP.4 T.METER
TP.5 VCO
FM 300Ω
AM
GND
F101 B.P.F.
ATF-155
F102 ATF-126
F103 ATF-126
F104 ATF-208
ATE-063
X101 (7.2MHz)
PHASE DETECTOR CHARGE PUMP
PROGRAMABLE DIVIDER
REFERENCE DIVIDER
SHIFT REGISTER LATCH
TUN CE
TUN CK
TUN DATA
OSC
REG
RF
MIX
AGC
AM-IF
DET
BUFFER
SIGNAL METER
LEVEL DIT
SD ADJ.
LED DRIVER
POST AMP
FM-IF
Q.D
S. CURVE
VCO
DC AMP
PHASE DETECTOR
SCHMITT CIRCUIT
STEREO/MONO CHANGE OVER SWITCH
38kHz FLIP FLOP
19kHz FLIP FLOP
19kHz FLIP FLOP
LAMP DRIVE AND FREQUENCY CHECK
ENFORCEMENT MONAURAL AND ENFORCEMENT V.C.O. STOP
INPUT PRE AMP
FEEDBACK AMP
COMPOSITE SIGNAL DETECTOR
Rch OUTPUT AMP
Lch OUTPUT AMP
VOLTAGE REGULATOR
R IN
GND
L IN
GND
L OUT
GND
R OUT
+12V
-12V
TUN CE
TUN CK
TUN DATA
STOP
MONO
STEREO
FUN CK
FUN DATA
FUN ST
SS
J4
J7
TAPE 2 MONI
TAPE 1 /DAT
PLAY IN
REC OUT
VCR/LINE
CD
PHONO
Lch
Rch
150mV/50kΩ
150mV/2.2kΩ
25mV/50kΩ
3.5mA
ST DT CK +12V
GND -12V
FUN ST
FUN DT
FUN CK
RY501 ASR-112
L502 (μH)
L301



7
8
9
10
11
12
A
B
C
D
WZ2397
IC401, 402 : TONE CONTROL
VR401 VOLUME
VR402 BALANCE
IC 401 M5218P
IC 402 M5218P
VR404 TREBLE
VR403 BASS
IC701 : MICROCOMPUTER
IC701 PD6013
Q701 : OFFSET
Q705, Q706 : DATA CONTROL
Q704 : S.S. ON/OFF
V701 AAV1079
SURROUND
SIMULATED STEREO
DAT
TAPE 2
STEREO
AUTO
TUNED
FM MONO
AM
FM
KHz
MHz
TUNING DOWN
TUNING UP
FM
AM
MEMORY
MEMORY SCAN
FM AUTO/MONO
TUNING AUTO/MANU
TAPE 2
TAPE 1
VCR
CD
TUNER
PHONO
LITHIUM BATTERY AEX-008
IC601 : REGULATOR
Q523, Q524 : OVER LOAD DET
Q601, Q602 : DC DET.
Q605 : POWER OFF MUTE
TRANS ASSY
T1 POWER TRANSFORMER ATS1119
POWER SW ASSY
S1 POWER ASG1027
POWER CORD ADG-063 AC 220/240V 50/60Hz
SP SWITCH ASSY
SP TERMINAL ASSY
SP. A
SP. B
17.9V/8Ω
67mV/8Ω
FM
AM
PHONO

1. **RESISTORS:**
Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. **CAPACITORS:**
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

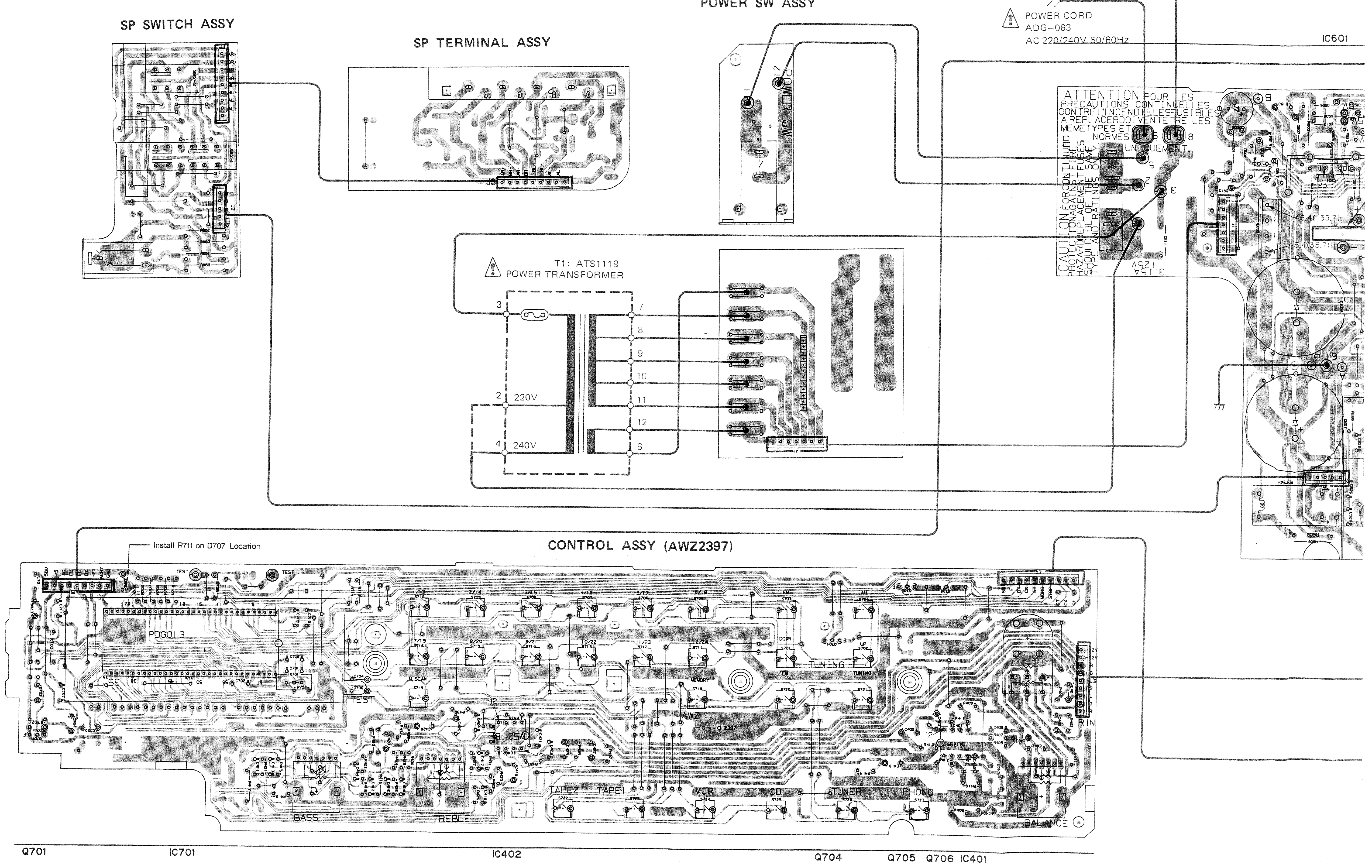
3. **VOLTAGE, CURRENT:**
▭; DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
mA; DC current at no input signal

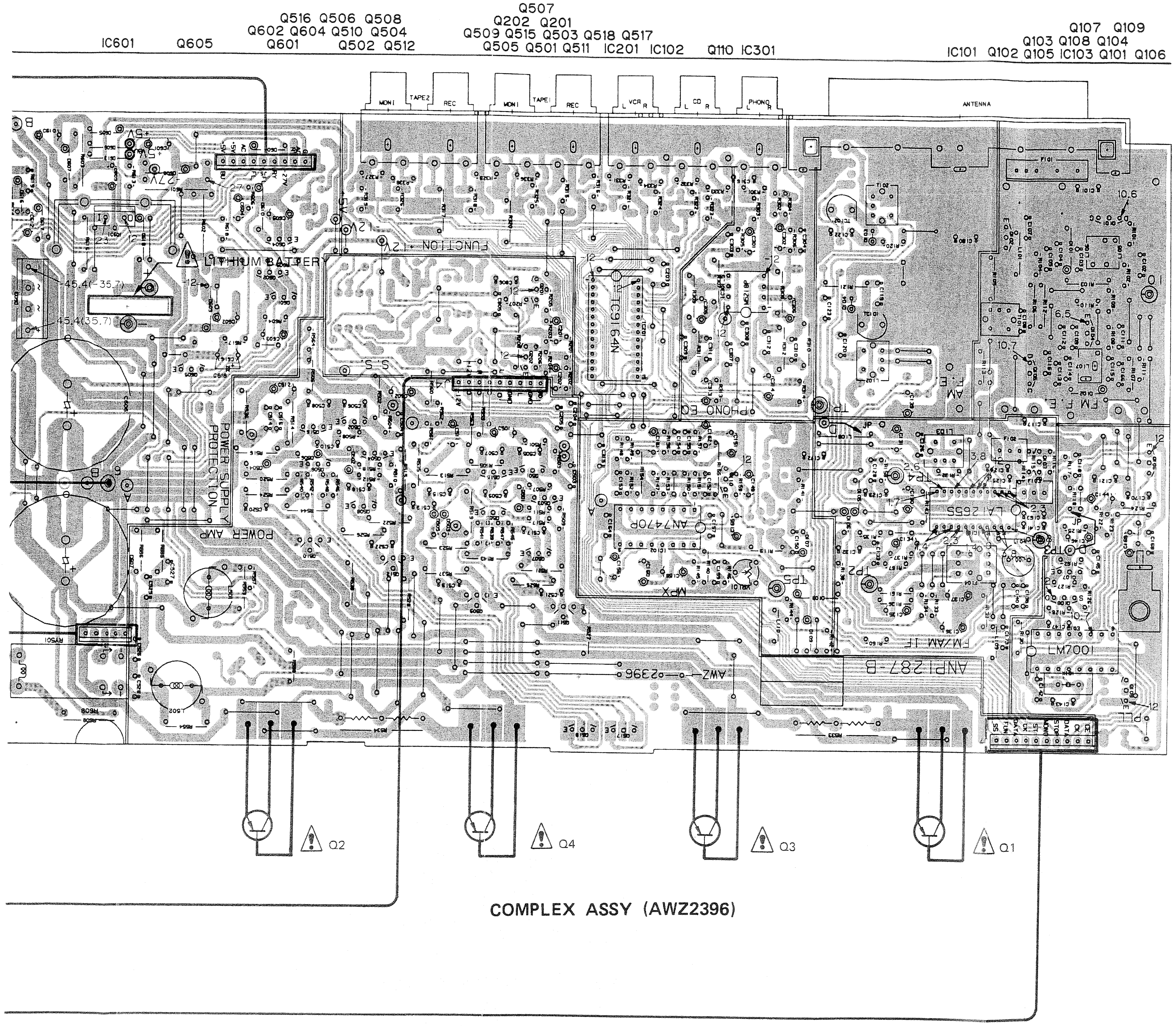
4. **OTHERS:**
➡; Signal route.
●; Adjusting point.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

4. P.C. BOARD CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
SP SWITCH ASSY
SP TERMINAL ASSY
POWER SW ASSY
POWER SW
POWER CORD
ADG-063
AC 220/240V 50/60Hz
IC601
ATTENTION POUR LES PRECAUTIONS CONTINUELLES CONTRE L'INCENDIE LES FUSIBLES A REPLACER DOIVENT ETRE LES MEME TYPES ET NORMES UNIQUEMENT
CAUTION FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
3.15A 125V
45.4(-35.7)
45.4(35.7)
T1: ATS1119
POWER TRANSFORMER
3
2
4
220V
240V
7
8
9
10
11
12
6
Install R711 on D707 Location
CONTROL ASSY (AWZ2397)
TEST
PDG013
M.SCAN
MEMORY
FM
AM
DOWN
UP
TUNING
AWZ
2397
BASS
TREBLE
TAPE2
TAPE1
VCR
CD
TUNER
PHONO
BALANCE
Q701
IC701
IC402
Q704
Q705
Q706
IC401


Q507
Q516 Q506 Q508
Q202 Q201
Q602 Q604 Q510 Q504
Q509 Q515 Q503 Q518 Q517
IC601 Q605 Q601 Q502 Q512
Q505 Q501 Q511 IC201 IC102 Q110 IC301
Q107 Q109
Q103 Q108 Q104
IC101 Q102 Q105 IC103 Q101 Q106
MONI
TAPE2
REC
MONI
TAPE1
REC
VCR
CD
PHONO
ANTENNA
LITHIUM BATTERY
FUNCTION
POWER SUPPLY PROTECTION
POWER AMP
IC9164N
AN7470P
PHONO EQ
MPX
FM/AM IF
ANP1287-B
AWZ-2396
LM7001
AM
FM FE
TP1
TP2
TP5
Q2
Q4
Q3
Q1

COMPLEX ASSY (AWZ2396)

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

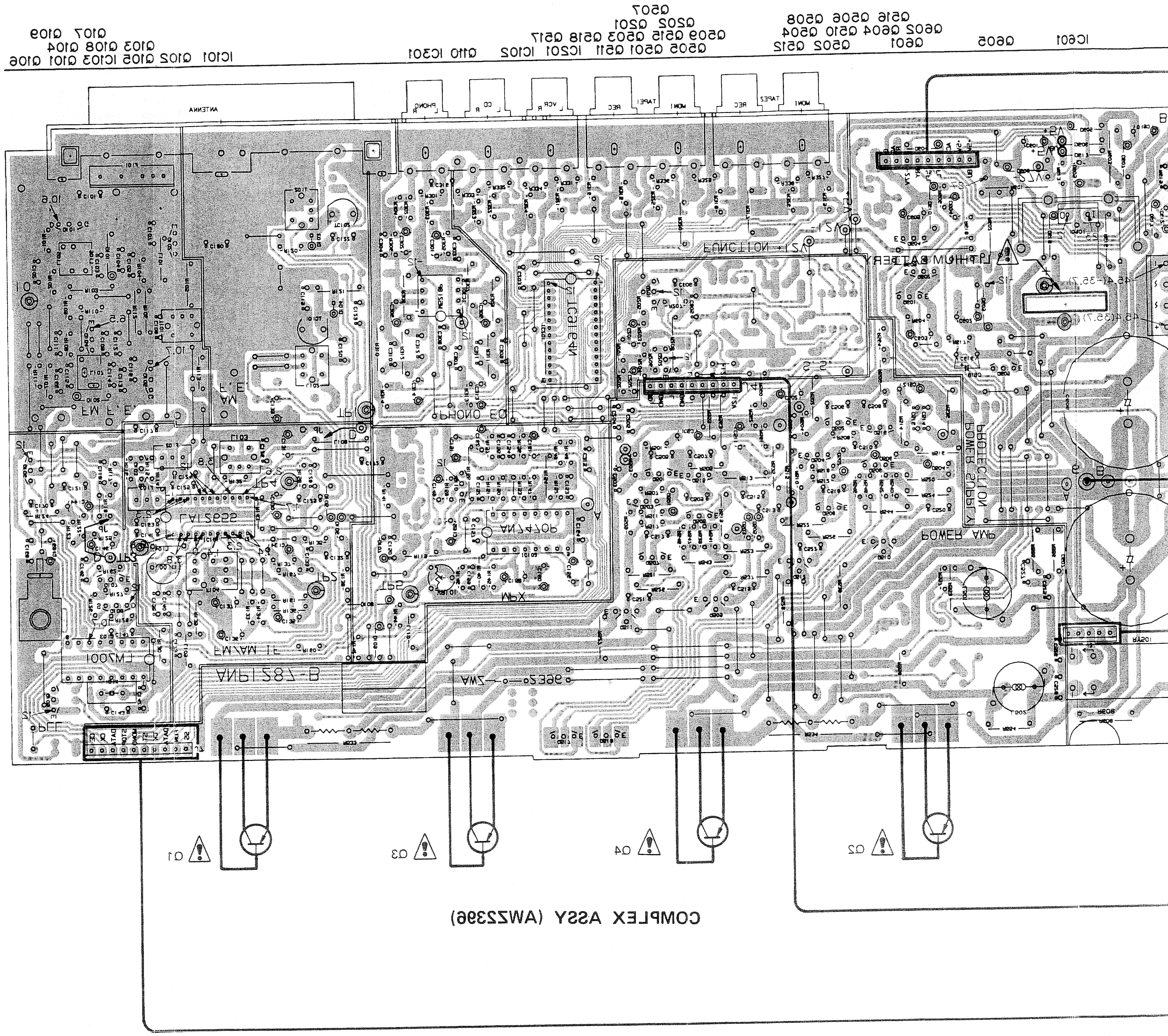
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

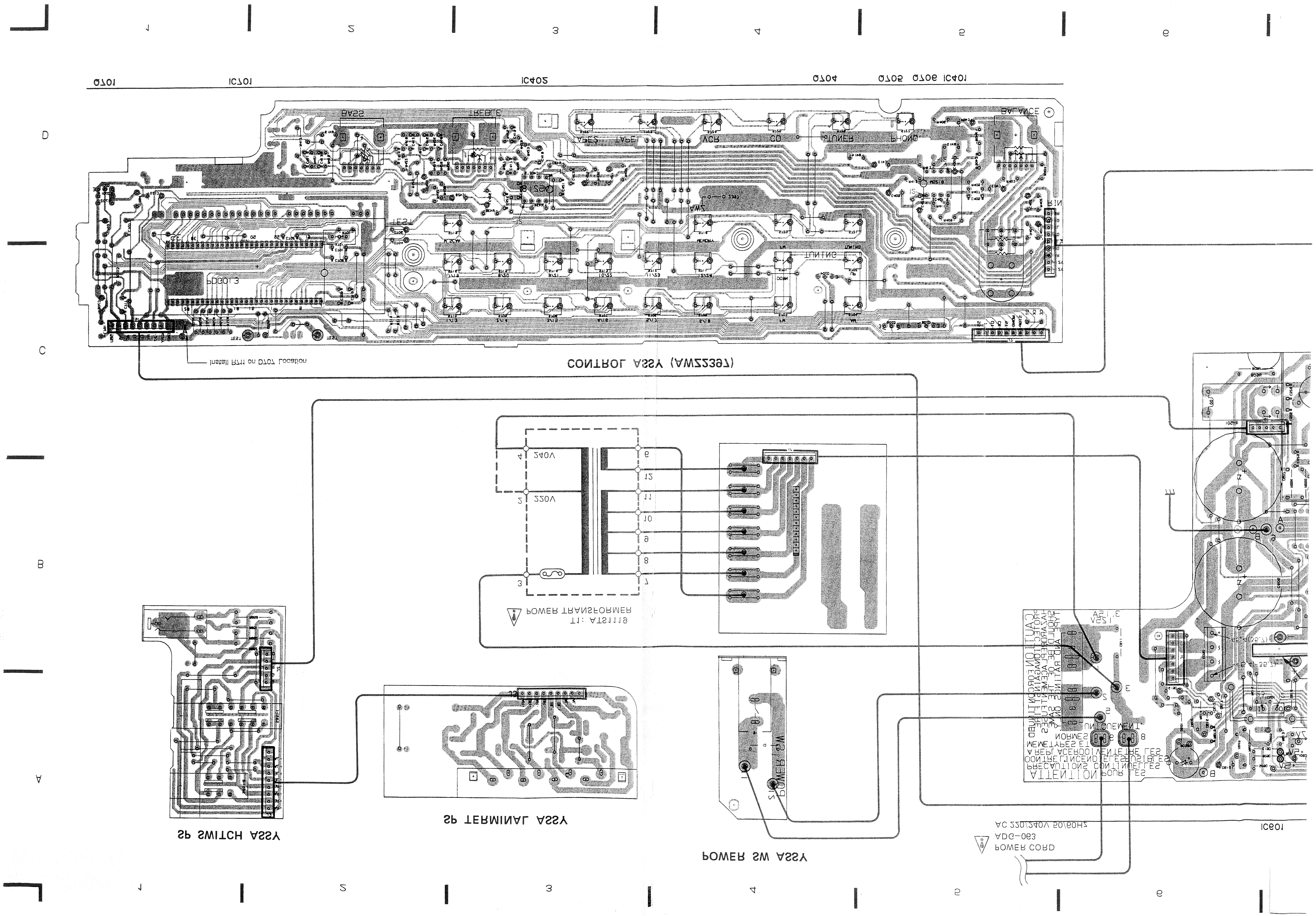
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ◎ (double circles) shows negatine termianl.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

This P.C. B. connection diagram is viewed from the foil side.


IC101 Q102 Q105 IC103 Q101 Q106
IC101 Q103 Q108 Q104
Q107 Q109
IC301 Q110
IC102 IC201 IC202
Q517 Q518 Q503 Q515 Q509
Q505 Q501 Q511
Q202 Q201 Q507
Q512 Q502 Q601
Q504 Q510 Q604 Q602
Q516 Q506 Q508
Q605
IC601
ANTENNA
PHONO
CD
VCR
TAPE1
TAPE2
REC
MON1
FUNCTION
LITHIUM BATTERY
PHONO EQ
FM/AM IF
MPX
POWER AMP
POWER SUPPLY PROTECTION
AWP1282-B
AWZ2396
Q1
Q2
Q3
Q4
COMPLEX ASSY (AWZ2396)


CONTROL ASSY (AWZ2397)
Install R711 on D707 Location
Q701
IC701
IC402
Q704
Q705 Q706 IC401
BASS
TREBLE
BALANCE
TAPE2
TAPE1
VCR
CD
TUNER
PHONO
TEST
MEMORY
TUNING
FM
AM
PDG013
T1: ATS1116
POWER TRANSFORMER
240V
220V
SP SWITCH ASSY
SP TERMINAL ASSY
POWER SW ASSY
POWER SW
POWER CORD
ADG-063
AC 220/240V 50/60Hz
IC601
ATTENTION POUR LES PRECAUTIONS CONTINUELLES
1
2
3
4
5
6
A
B
C
D

5. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω 56 × 10^1 561..........................RD1/4PS $\boxed{5}$ $\boxed{6}$ $\boxed{1}$ *J*
47kΩ 47 × 10^3 473..........................RD1/4PS $\boxed{4}$ $\boxed{7}$ $\boxed{3}$ *J*
0.5Ω 0R5..RN2H $\boxed{0}$ $\boxed{R}$ $\boxed{5}$ *K*
1Ω 010..RS1P $\boxed{0}$ $\boxed{1}$ $\boxed{0}$ *K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10^1 5621........................RN1/4SR $\boxed{5}$ $\boxed{6}$ $\boxed{2}$ $\boxed{1}$ *F*

MISCELLANEOUS PARTS

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	POWER SW ASSY	
	COMPLEX ASSY	AWZ2396
	CONTROL ASSY	AWZ2397
	SP SWITCH ASSY	
	SP TERMINAL ASSY	

OTHERS

Mark	Symbol & Description		Part No.
⚠	Q3, Q4	Transistor	2SA1263N
⚠	Q1, Q2	Transistor	2SC3180N
⚠	T1	Power transformer	ATS1119
⚠	FU1	Fuse (T1.25A)	AEK–509
⚠		AC power cord	ADG–063
⚠		Lithium battery (3V)	AEX–008

POWER SW ASSY

SWITCH

Mark	Symbol & Description	Part No.
⚠	S1	ASG1027

CAPACITOR

Mark	Symbol & Description		Part No.
⚠	C1	(0.01μ/AC400V)	ACG1003

COMPLEX ASSY (AWZ2396)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC102	AN7470P
	IC101	LA1256S
	IC103	LM7001
	IC301	M5218P
	IC201	TC9164T
	IC601	μPC78M12H
	Q106, Q109	RN2201
	Q505, Q506	2SA1145
	Q511, Q512	2SA965
	Q501, Q502, Q515, Q516	2SA992
	Q503, Q504, Q601, Q602, Q604	2SC1845
	Q509, Q510	2SC2235
	Q107, Q110, Q201, Q202	2SC2458
	Q517, Q518	2SC2603
	Q103, Q104	2SC2668
	Q507, Q508	2SC2705
	Q102	2SC2786
	Q605	2SC2878
	Q101, Q105	2SK241
	Q108	2SK246
	D604, D607	HZS6B2L
	D101, D102	ITT310
	D609, D610	RD12EB
	D608	RD24EB
	D616	RD5.1EB
	D103, D104	SVC321C2
⚠	D601, D602	S5566
	D105–D109, D501–D506, D605, D606, D613, D617–D619	1SS252
⚠	D603	4D4B44

RELAY

Mark	Symbol & Description	Part No.
	RY501	ASR-111

COILS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	T102 AM antenna transformer	ATB-095
	T101 FM matching transformer	ATE-063
	L102 AM OSC coil	ATB-114
	L106 FM coil	ATC1002
	L105 FM coil	ATC1004
	L107 FM coil	ATC1011
	L103 FM detector coil	ATE-079
	L501, L502 AF choke coil	ATH1004
	L101, L108–L110 Inductor	LAU2R2M
	L104 Inductor	LTA472J
	F102, F103 FM ceramic filter	ATF-126
	F101 FM band pass filter	ATF-155
	F104 AM ceramic filter	ATF-208

CAPACITORS

Mark	Symbol & Description	Part No.
	TC101, TC102	AMC-015
⚠	C611 (0.0μ/AC400V.)	ACG1003
	C606, C607	ACH1119
	C517, C518	CCCSL050C500
	C519–C522	CCCSL101C500
	C128, C303, C304, C509, C510	CCCSL221J50
	C507, C508	CCCSL470J50
	C101	CCDCH040C50
	C113	CCDCH080D50
	C111, C117, C119, C142, C143, C513–C516	CCDCH150J50
	C112	CCDCH330J50
	C103	CCDRH150J50
	C116	CCDSL010C50
	C105	CCDSL020C50
	C107, C505, C506	CCDSL101J50
	C163	CCDSL470J50
	C114	CCDTH180J50
	C618	CEANPR47M50
	C150	CEANP100M50
	C616	CEANP3R3M50
	C156	CEASR22M50
	C146	CEASR47M50
	C131	CEAS0R1M50
	C130	CEAS010M50
	C160	CEAS1R5M50

Mark	Symbol & Description	Part No.
	C135, C139, C149, C165, C169, C609, C612	CEAS100M50
	C511, C512, C604	CEAS101M16
	C602	CEAS101M25
	C608	CEAS102M35
	C605	CEAS2R2M100
	C134, C161, C162, C201, C202, C301, C302, C313, C314, C501, C502	CEAS2R2M50
	C136, C158	CEAS3R3M50
	C144	CEAS330M16
	C137	CEAS4R7M50
	C305, C306, C610	CEAS470M10
	C151, C601	CEAS470M25
	C603	CEAS471M6
	C525–C528	CFTXA104J50
	C133	CKCYB472K50
	C121, C140	CKCYF223Z50
	C115	CKDYB102K50
	C503, C504	CKDYB102K500
	C154, C155	CKDYB272K50
	C315	CKDYB331K50
	C102, C104, C108, C118, C122, C123, C129, C141, C145, C147, C166, C168, C170, C204, C205, C307, C308, C805, C806	CKDYF103Z50
	C180	CKDYF223Z50
	C124, C125, C138, C157, C164, C173, C203, C316	CKDYF473Z50
	C126, C172	CKDYX473M25
	C152, C153	CQMA102K50
	C309, C310	CQMA242J50
	C132	CQMA683J50
	C311, C312	CQMA822J50
	C120	CQSA431J50
	C159	CQSA471J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR101	VRTB6VS472
⚠	R533, R534 (0.33 x 2)	ACN-139
	R515, R516	RDR1/4PM104J
	R501, R502, R559–R562	RDR1/6PU□□□J
	R555, R556	RD1/4PMF100J
⚠	R519, R520, R527, R528, R537, R538, R553, R554	RD1/4PMF□□□J
	R307–R312, R513, R514, R614	RD1/4PM□□□J

Mark	Symbol & Description	Part No.
⚠	R521–R526	RFA1/4PS101J
	R543, R544	RN1/4PQ1501F
	R603	RS1LMF181J
⚠	R608	RS1LMF821J
⚠	R601	RS2LMF122J
⚠	R602	RS2LMF911J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X101 Crystal resonator	ASS1005
	4P antenna terminal	AKA1010
	4P pin jack	AKB1007
	6P pin jack	AKB1024

CONTROL ASSY (AWZ2397)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC401, IC402	M5218P
	IC701	PDG013
	Q701, Q704–Q706	RN1203
	D710, Q704–Q706	1SS252

SWITCHES

Mark	Symbol & Description	Part No.
	S701–S716, S718–S727	ASG1029

COIL

Mark	Symbol & Description	Part No.
	L701 Inductor	LAU560K

CAPACITORS

Mark	Symbol & Description	Part No.
	C424	CCCSL390K500
	C701, C702	CCDCH330J50
	C405, C406	CCMSL470J50
	C706	CEAS101M10
	C403, C404, C429, C430, C703	CEJA010M50
	C425, C426	CEJA100M25
	C409, C410, C419, C420, C720	CEJA2R2M50
	C401, C402	CEJA4R7M35
	C704	CEJA4R7M50
	C427, C428	CEJA470M10
	C709, C710	CKDYB331K50
	C708	CKDYF103Z50
	C707	CKDYF473Z50
	C711	CKDYX473M25
	C421, C422	CKMYB102K50
	C411, C412	CQMA153J50
	C417, C418	CQMA183J50
	C415, C416	CQMA332J50
	C413, C414	CQMA823J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR403, VR404	ACS1032
	VR402	ACS1033
	VR401	ACT1040
	R435, R436	RDR1/6PU332J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X701 Ceramic oscillator	ASS1004
	V701 Fluorescent indicator tube	AAV1079

SP SWITCH ASSY

SWITCH

Mark	Symbol & Description	Part No.
	S851	SUL5LX8YS

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R851, R852	RS1PMF331J
	R859, R860	RS1PMF681J

OTHERS

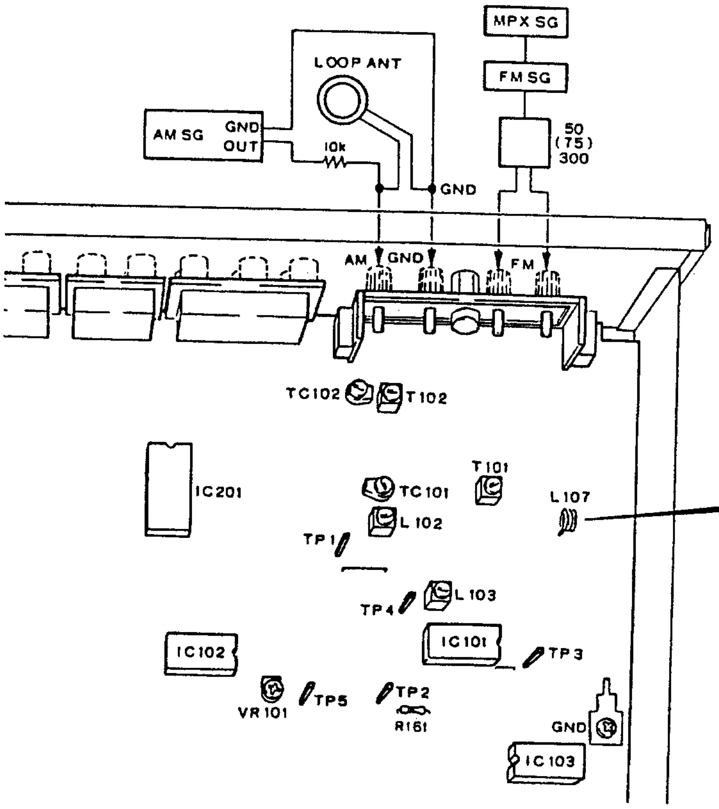
Mark	Symbol & Description	Part No.
	Phone jack	AKN1002

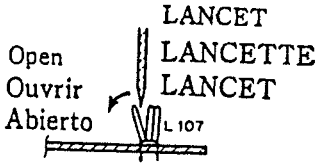
SP TERMINAL ASSY

OTHERS

Mark	Symbol & Description	Part No.
	8P speaker terminal	AKE-111

6. ADJUSTMENTS


MPX SG
FM SG
LOOP ANT
AM SG
GND
OUT
10k
50
(75)
300
GND
AM
GND
FM
TC102
T102
IC201
T101
TC101
L107
L102
TP1
TP4
L103
IC101
TP3
IC102
VR101
TP5
TP2
R161
GND
IC103


LANCET
LANCETTE
LANCET
Open
Ouvrir
Abierto
L107

Ajusting L107
Règlage de L107
Ajuste de L107

6.1 ADJUSTMENT FOR HB AND HE TYPES

FM TUNER SECTION

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the function to FM.
- Connect the FM multiplex stereo signal generator to the FM SG external modulator terminal. Set the modulation to Main 1 kHz/L+R/±68.25kHz deviation. Pilot 19kHz/±6.75kHz deviation.

Step	FM SG (1kHz, ±75kHz deviation)		Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	No signal		87.5MHz	———	Check DC voltage between terminal TP1(VT) and ground (2.5V−4V).
2	98.0MHz	30 to 40 dB	98.0MHz	T101 L107	Adjust DC voltage between IC101 13 pin and ground at maximum.
3	98.0MHz	60dB	98.0MHz	L103	Adjust DC voltage between terminal TP 3 and TP 4 to 0±50mV.
4	98.0MHz no modulation	60dB	98.0MHz	VR101	Adjust signal between TP 5(VCO) and ground to 76kHz (within ±200Hz).

AM TUNER SECTION

MW Tuner Section

- Connect the furnished AM loop antenna between terminals AM ANTENNA and GND.
- Connect the AM signal generator (AM SG) to the AM ANTENNA terminal through a 10kΩ resistor.
- Set the function to AM (MW).

(*1) One is the channel step frequency of 10kHz and the other is 9kHz. Accordingly, in case of model 10kHz step, the adjustment should be performed by using the frequency of Item "10kHz step" and in case of model 9kHz step, the adjustment should be performed by using the frequency of Item "9kHz step".

(*2) Tune the AM SG to the SX-225.

Step	AM SG (400Hz, 30% modulation)			Frequency display (*1)		Adjustment point	Adjustment procedure
	Frequency (*1)		Level				
	10kHz step	9kHz step		10kHz step	9kHz step		
1	No signal			530kHz	531kHz	L102	Adjust DC voltage between terminal TP 1(VT) and ground. (1.3±0.1V)
2	No signal			1700kHz	1602kHz	TC101	Adjust DC voltage between terminal TP 1(VT) and ground. (10±0.3V)
3	Repeat steps 1 and 2 until both specifications become correct.						
4	600kHz(*2)	603kHz(*2)	76dB	600kHz	603kHz	T102	Adjust DC voltage between TP2 and ground at maximum.
5	1400kHz(*2)	1395kHz(*2)	76dB	1400kHz	1395kHz	TC102	
6	Repeat steps 4 and 5 until maximum sensitivity is attained.						
7	1000kHz	999kHz(*2)	45 to 65dB	1000kHz	999kHz	R161 4.7kΩ	However, remove the R161(4.7kΩ) from the COMPLEX assembly if the tuning indicator fails of light up at more than 65dB

6.1 RÉGLAGES POUR LES TYPES HB ET HE

SECTION TUNER FM

- Connecter le générateur de signaux FM (FM SG) à la borne de 300 ohms de l'antenne FM (FM ANTENNA) par l'intermédiaire d'une antenne factice de 300 ohms.
- Régler la fonction sur FM.
- Connecter le générateur de signaux stéréo multiplex FM à la borne du modulateur externe FM SG. Régler la modulation à Principal 1 kHz/G+D/±68,25 kHz d'écart; Pilote 19 kHz/±6,75 kHz d'écart.

Etape	FM SG (1kHz, ±75kHz d'écart)		Affichage de fréquence	Point de réglage	Procédure de réglage
	Fréquence	Niveau			
1	Pas de signal		87,5 MHz	———	Vérifier la tension CC entre la borne TP1 (VT) et la terre (2,5 V - 4 V).
2	98,0 MHz	30 à 40 dB	98,0 MHz	T101 L107	Régler la tension CC entre la broche (13) IC101 et la terre au maximum.
3	98,0 MHz	60 dB	98,0 MHz	L103	Régler la tension CC entre les bornes TP3 et TP4 à 0 ±50mV.
4	98,0 MHz	60 dB	98,0 MHz	VR101	Régler le signal entre la borne TP5 (VCO) et la terre à 76 kHz (moins de ±200 Hz).
	sans modulation				

SECTION TUNER AM

Section tuner PO

- Connecter l'antenne cadre AM fournie entre les bornes d'antenne AM (AM ANTENNA) et de terre (GND).
- Connecter le générateur de signaux AM (AM SG) à la borne d'antenne AM (ANTENNA AM) par l'intermédiaire d'une résistance de 10 kohms.
- Régler la fonction sur AM (MW).

(*1) Le premier est la fréquence de pas de canaux de 10 kHz et l'autre de 9 kHz. En conséquence, dans le cas du modèle avec pas de 10 kHz, le réglage doit être effectué en utilisant la fréquence de l'article "Pas de 10 kHz" et dans le cas du modèle avec pas de 9 kHz, le réglage doit être effectué en utilisant la fréquence de l'article "Pas de 9 kHz".

(*2) Accorder le AM GS au SX-225.

Etape	AM SG (400 Hz, modulation de 30%)			Affichage de fréquence (*1)		Point de réglage	Procédure de réglage
	Fréquence (*1)		Niveau				
	Pas de 10kHz	Pas de 9kHz		Pas de 10kHz	Pas de 9kHz		
1	Pas de signal			530 kHz	531 kHz	L102	Régler la tension CC entre la borne TP1 (VT) et la terre (1,3 V ±0,1 V)
2	Pas de signal			1700 kHz	1602 kHz	TC101	Régler la tension CC entre la borne TP1 (VT) et la terre (10 V ±0,3 V)
3	Répéter les étapes 1 et 2 jusqu' à ce que les spécifications soient toutes les deux correctes.						
4	600kHz(*2)	603kHz(*2)	76 dB	600 kHz	603 kHz	T102	Régler la tension CC entre TP2 et la terre au maximum.
5	1400kHz(*2)	1395kHz(*2)	76 dB	1400 kHz	1395 kHz	TC102	
6	Répéter les étapes 4 et 5 jusqu' à ce que la sensibilité maximum soit obtenue.						
7	1000 kHz	999kHz(*2)	45 à 65 dB	1000 kHz	999 kHz	(R161 4,7 kohms)	Cependant, retirer le R161 (4,7 kohms) de l'ensemble COMPLEX si le témoin d'accord ne s'allume pas à plus de 65 dB.

6.1 AJUSTE PARA LOS TIPOS HB Y HE

SECCIÓN DEL SINTONIZADOR DE FM

- Conecte el generador de señal de FM (FG SG) al terminal FM ANTENNA 300Ω a través de una antena ficticia de 300Ω.
- Ajuste la función a FM.
- Conecte el generador de señales estéreo múltiplex de FM al terminal del modulador externo del FM SG. Ajuste la modulación de la señal principal a 1 kHz/L+R/±68,25 kHz de desviación, y la señal piloto a 19 kHz/±6,75 kHz de desviación.

Paso	FM SG (1 kHz, +75 kHz de desviación)		Frecuencímetro del	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	Sin señal		87,5 MHz	———	Compruebe la tensión de CC entre el terminal TP1 (VT) y masa (2,5V - 2V).
2	98,0 MHz	30 a 40 dB	98,0 MHz	T101 L107	Ajuste al máximo la tensión de CC entre la patilla (13) del IC101 y masa.
3	98,0 MHz	60 dB	98,0 MHz	L103	Ajuste la tensión de CC entre los terminales TP3 y TP4 a 0±50 mV.
4	98,0 MHz	60 dB	98,0 MHz	VR101	Ajuste la señal entre el terminal TP5 (VCO) y masa a 76 kHz (dentro de ±200 Hz).
	Sin modulación				

SECCIÓN DEL SINTONIZADOR DE AM

Sección del sintonizador de MW

- Conecte la antena de cuadro de AM suministradà entre los terminales AM ANTENNA y GND.
- Conecte el generador de señales de AM (AM SG) al terminal AM ANTENNA a través de un resistor de 10 kilohmios.
- Ajuste la función a AM (MW).

(*1) Uno es el de frecuencia de separación entre canales de 10 kHz, y el otro de 9 kHz. Por consiguiente, en el caso del modelo de separación de 10 kHz, el ajuste deberá realizarse empleando la frecuencia del ítem "separación de 10 kHz", y en el caso del modelo de 9 kHz, el ajuste deberá realizarse empleando la frecuencia del ítem "separación de 9 kHz".

(*2) Sintonice el AM SG con el SX-225.

Paso	AM SG (400 Hz, modulación al 30%)			Frecuencímetro del(*1)		Punto de ajuste	Procedimiento de ajuste
	Frecuencia (*1)		Nivel				
	Separación de 10 kHz	Separación de 9 kHz		Separación de 10 kHz	Separación de 9 kHz		
1	Sin señal			530 kHz	531 kHz	L102	Ajuste la tensión de CC entre el terminal TP1 (VT) y masa (1,3 ±0,1V).
2	Sin señal			1700 kHz	1602 kHz	TC101	Ajuste la tensión de CC entre el terminal TP1 (VT) y masa (10 ±0,3V).
3	Repita los pasos 1 y 2 hasta que ambas especificaciones sean correctas.						
4	600kHz(*2)	603kHz(*2)	76 dB	600 kHz	603 kHz	T102	Ajuste al máximo la tensión de CC entre el terminal TP2 y masa.
5	1400kHz(*2)	1395kHz(*2)	76 dB	1400 kHz	1395 kHz	TC102	
6	Repita los pasos 4 y 5 hasta obtener la sensibilidad máxima.						
7	1000 kHz	999 kHz (*2)	45 a 65 dB	1000 kHz	999 kHz	R161 4,7 kilohmios	Sin embargo, si el indicador de sintonía no se enciende a más de 65 dB, desconecte R161 (4,7 kilohmios) del conjunto COMPLEX.

6.2 ADJUSTMENT FOR HEZ TYPE

- This adjustment procedure is for only the adjustment (FM tuner adjustment Step I) which is different from that for the SX-225/HEZ type.

FM Tuner Adjustment

Step		FM SG (1kHz ±75kHz deviation) Frequency	FM SG (1kHz ±75kHz deviation) Level	Frequency display	Adjustment point	Adjustment procedure
I	1	90.0MHz	30 to 40dB	90.0MHz	L902,T901,L903 (AWB1004)	Adjustment until DC voltage between IC101 13pin (FM S−METER) and ground is at maximum.
	2	106.0MHz	30 to 40dB	106.0MHz	TC901,T901,L903 (AWB1004)	
	3	90.0MHz	30 to 40dB	90.0MHz	L902 (AWB1004)	
	4	Repeat step 2 and 3 until the DC voltage between IC101 13pin (FM S−METER) and GND is at maximum. Step 3 should always be the last step performed.				
	5	98.0MHz	30 to 40dB	98.0MHz	T902(AWB1004)	Adjustment until DC voltage between IC101 13pin (FM S−METER) and ground is at maximum.
II	6	98.0MHz	60dB	98.0MHz	L103	Adjust DC voltage between terminal TP 3 and TP 4 to 0±50mV
	7	98.0MHz	60dB	98.0MHz	VR101	Adjust signal between TP 5(VCO) and ground to 76kHz (within ±200Hz).

As the adjusting method for the AM tuner is the same as that for the HB and HE types, refer to 23 page.

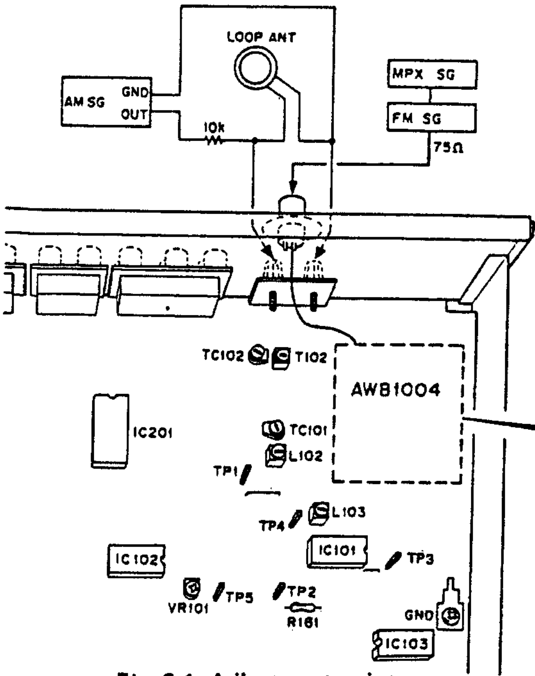

LOOP ANT
AM SG
GND
OUT
10k
MPX SG
FM SG
75Ω
TC102
T102
AWB1004
IC201
TC101
L102
TP1
TP4
L103
IC101
TP3
IC102
VR101
TP5
TP2
R161
GND
IC103

Fig. 6-1 Adjustment point

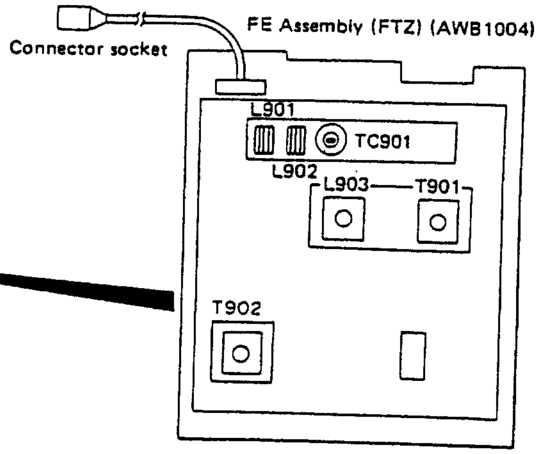
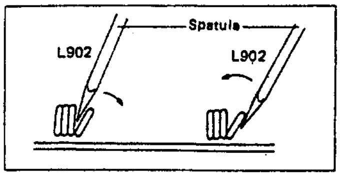

Connector socket
FE Assembly (FTZ) (AWB1004)
L901
TC901
L902
L903
T901
T902

Fig. 6-2 Adjustment point of FE Assembly


Spatula
L902
L902

To make the output maximum by opening and closing of the first right side turn of the coil.

Fig. 6-3 Adjustment tuning

Use a spatula whose an edge is thin. The spatula is not metal (ex. Glass-Cloth Epoxy Resin).

SPATULA

6.2 RÉGLAGE POUR LE TYPE HEZ

- Ce réglage n'est à effectuer que lorsque le réglage (réglage de tuner FM, Etape 1) est différent de celui pour le type SX-225/HEZ.

Réglage Tuner FM

Etape		FM SG (1 kHz, ±75 kHz d'édart)		Affichage de fréquence	Point de réglage	Procédure de réglage
		Fréquence	Niveau			
I	1	90,0 MHz	30 à 40 dB	90,0 MHz	L902, T901, L903 (AWB1004)	Réglage jusqu'à ce que la tension CC entre la broche 13 de IC101 (S-METRE FM) et la terre soit au maximum.
	2	106,0 MHz	30 à 40 dB	106,0 MHz	TC901, T901, L903 (AWB1004)	
	3	90,0 MHz	30 à 40 dB	90,0 MHz	L902 (AWB1004)	
	4	Répéter les étapes 2 et 3 jusqu'à ce que la tension CC entre la broche 13 de IC101 (S-METRE FM) et la terre soit au maximum. L'étape 3 doit toujours être effectuée en dernier.				
	5	98,0 MHz	30 à 40 dB	98,0 MHz	T902 (AWB1004)	Réglage jusqu'à ce que la tension CC entre la broche 13 de IC101 (S-METRE FM) et la terre soit au maximum.
II	6	98,0 MHz	60 dB	98,0 MHz	L103	Régler la tension CC entre les bornes TP3 et TP4 à 0 ±50mV
	7	98,0 MHz	60 dB	98,0 MHz	VR101	Régler le signal entre la borne TP5 (VCO) et la terre à 76 kHz (moins de ±200 Hz).

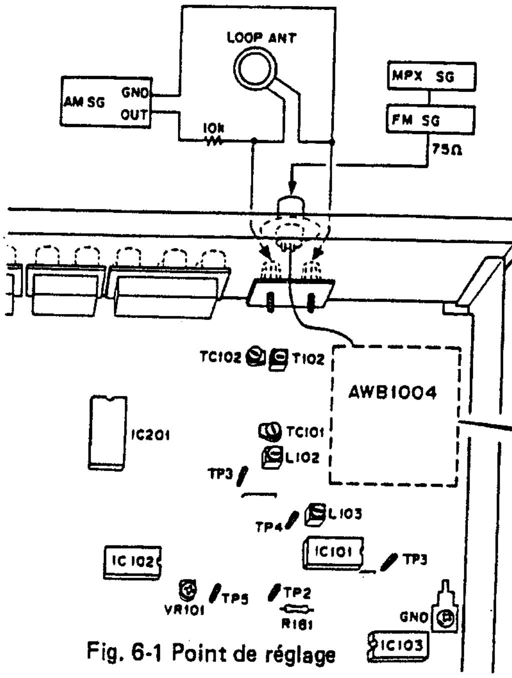

LOOP ANT
AM SG
GND
OUT
10k
MPX SG
FM SG
75Ω
TC102
T102
AWB1004
IC201
TC101
L102
TP3
TP4
L103
IC102
IC101
TP3
VR101
TP5
TP2
R161
GND
IC103

Fig. 6-1 Point de réglage

La méthode d'adjustment de la redio AM est la même que celle des types HB et HE, se référer à la page 24.

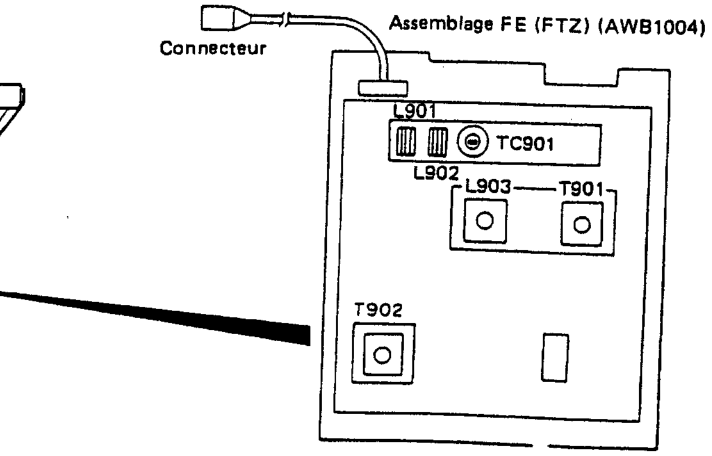
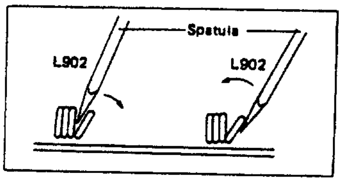

Connecteur
Assemblage FE (FTZ) (AWB1004)
L901
TC901
L902
L903
T901
T902

Fig. 6-2 Point de réglage de l'assemblage FE


Spatule
L902
L902

Pour obtenir une sortie maximale en ouvrant et fermant la spire à l'extrémité droite de la bobine.

Fig. 6-3 Accord de réglage

Utiliser une spatule à bord fin. Elle ne doit pas être en métal (ex. résine époxy tissu de verre)

SPATULE

6.2 AJUSTE PARA EL TIPO HEZ

- Este procedimiento de ajuste es solamente el ajuste (paso I de ajuste del sintonizador de FM) que es diferente al del tipo SX-225/HEZ.

Ajuste del sintonizador de FM

Paso		Señal de FM (1 kHz, desviación ±75 kHz)		Presentación de frecuencia	Punto de ajuste	Procedimiento de ajuste
		Frecuencia	Nivel			
I	1	90 MHz	30 a 40 dB	90 MHz	L902, T901, L903 (AWB1004)	Ajuste hasta que la tensión de CC entre la patilla 13 del IC101 (FM S-METER) y puesta a tierra se encuentre al máximo.
	2	106 MHz	30 a 40 dB	106 MHz	TC901, T901, L903 (AWB1004)	
	3	90 MHz	30 a 40 dB	90 MHz	L902 (AWB1004)	
	4	Repita los pasos 2 y 3 hasta que la tensión de CC entre la patilla 13 del IC101 (FM S-METER) y puesta a tierra (GND) se encuentre al máximo. El paso 3 siempre debe ser el último paso realizado.				
	5	98 MHz	30 a 40 dB	98 MHz	T902 (AWB1004)	Ajuste hasta que la tensión de CC entre la patilla 13 del IC101 (FM S-METER) y puesta a tierra se encuentre al máximo.
II	6	98,0 MHz	60 dB	98,0 MHz	L103	Ajuste la tensión de CC entre los terminales TP3 y TP4 a 0±50 mV.
	7	98,0 MHz	60 dB	98,0 MHz	VR101	Ajuste la señal entre el terminal TP5 (VCO) y masa a 76 kHz (dentro de ±200 Hz).

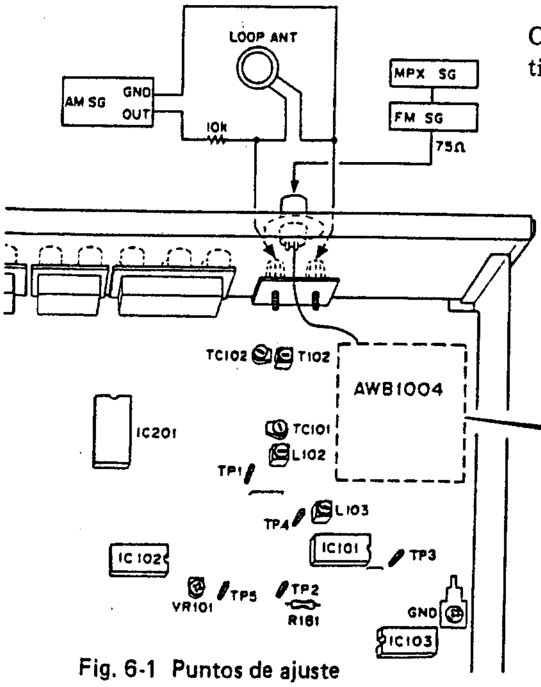

LOOP ANT
AM SG
GND
OUT
10k
MPX SG
FM SG
75Ω
TC102
T102
AWB1004
IC201
TC101
L102
TP1
TP4
L103
IC101
TP3
IC102
VR101
TP5
TP2
R181
GND
IC103

Fig. 6-1 Puntos de ajuste

Como el método de ajuste del sintonizador de AM es igual que para los tipos HB y HE, consulte la página 25.

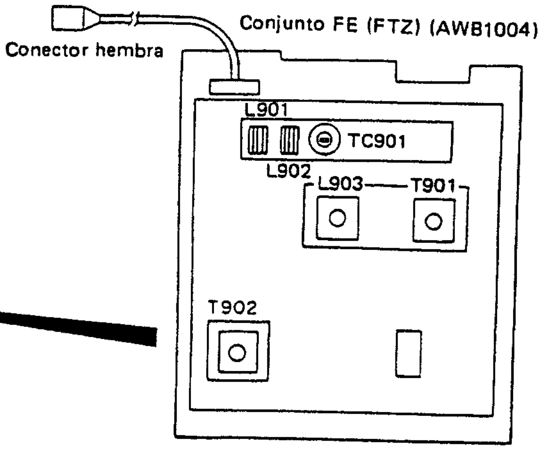
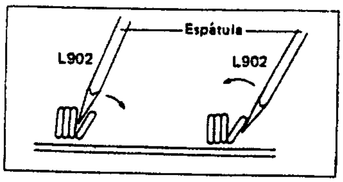
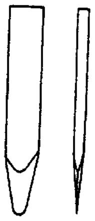

Conjunto FE (FTZ) (AWB1004)
Conector hembra
L901
TC901
L902
L903
T901
T902

Fig. 6-2 Puntos de ajuste del conjunto FE


Espátula
L902
L902

Ajuste al máximo la salida abriendo y cerrando la primera espira de la derecha de la bobina.

Fig. 6-3 Ajuste de la sontinía



Emplee una espátula cuyo borde sea fino. La espátula no deberá ser de metal (p. ej. resina epoxídica con fibra de vidrio)

ESPÁTULA

7. FOR HE AND HEZ TYPES

7.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

The SX-225/HE and HEZ types are the same as the SX-225/HB type with the exception of the following sections.

Mark	Symbol & Description	Part No.		
		SX-225/HB	SX-225/HE	SX-225/HEZ
	COMPLEX ASSY	AWZ2396	AWZ2396	AWZ2400
	CONTROL ASSY	AWZ2397	AWZ2397	AWZ2401
	SP SWITCH ASSY	Non supply	Non supply	Non supply
	SP TERMINAL ASSY	Non supply	Non supply	Non supply
	TRANS ASSY	•••	•••	Non supply
	FE ASSY	•••	•••	AWB1004
⚠	AC power cord	ADG-063	ADG1021	ADG1010
⚠	Capacitor(C2)	•••	•••	ACE-507
	Ceramic capacitor(C3)	•••	•••	CKDYB102K50
⚠	Fuse(FU1)	AEK-511	AEK-018	AEK-018
	Antenna set	AEA1002	AEA1002	•••
	FM antenna ASSY	•••	•••	ADH1002
	Loop antenna ASSY	•••	•••	ATB-113
	Resistor	•••	•••	RD1/4PMF100J
	PAL socket	•••	•••	AKX1029
	Operating instructions(English)	ARB1163	•••	•••
	Operating instructions (English/German/French/Italian/ Dutch/Swedish/Spanish/Portuguese)	•••	ARE1110	•••
	Operating instructions(German)	•••	•••	ARC1128
	Nut M12	•••	•••	NKX2FNI
	Earth screw	•••	•••	ABA1047

7.2 LINE VOLTAGE SELECTION FOR HB AND HE TYPES

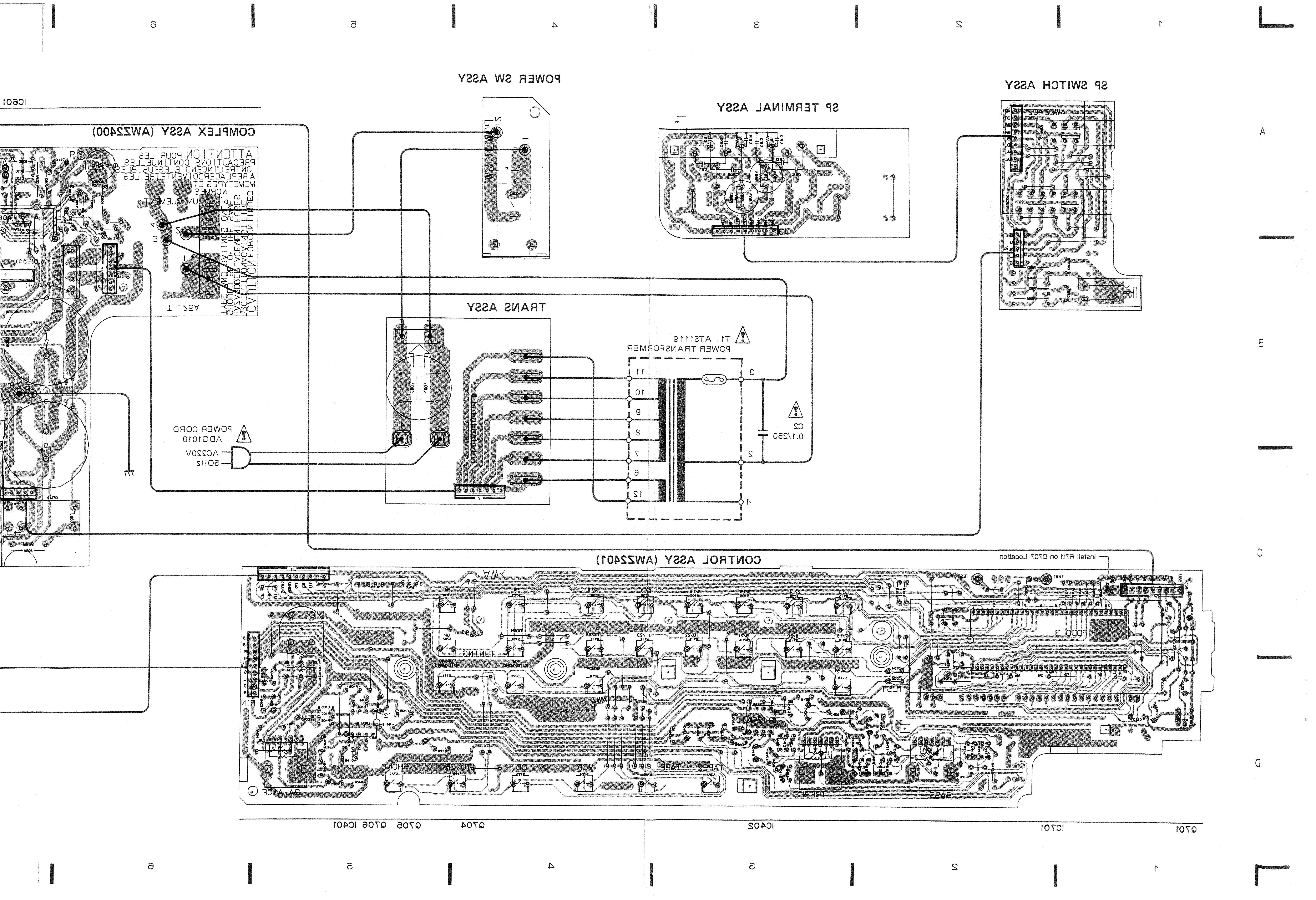
Line voltage can be changed with following steps.

1. Desconnect the AC power cord.
2. Remove the top cover.
3. Change the connection wire (To Power transformer) of Terminal No. 2 or No. 4 (BRN) as follows.

Voltage	Terminal No. 2	Terminal No. 4
220V	BRN wire	.....
240V	.....	BRN wire

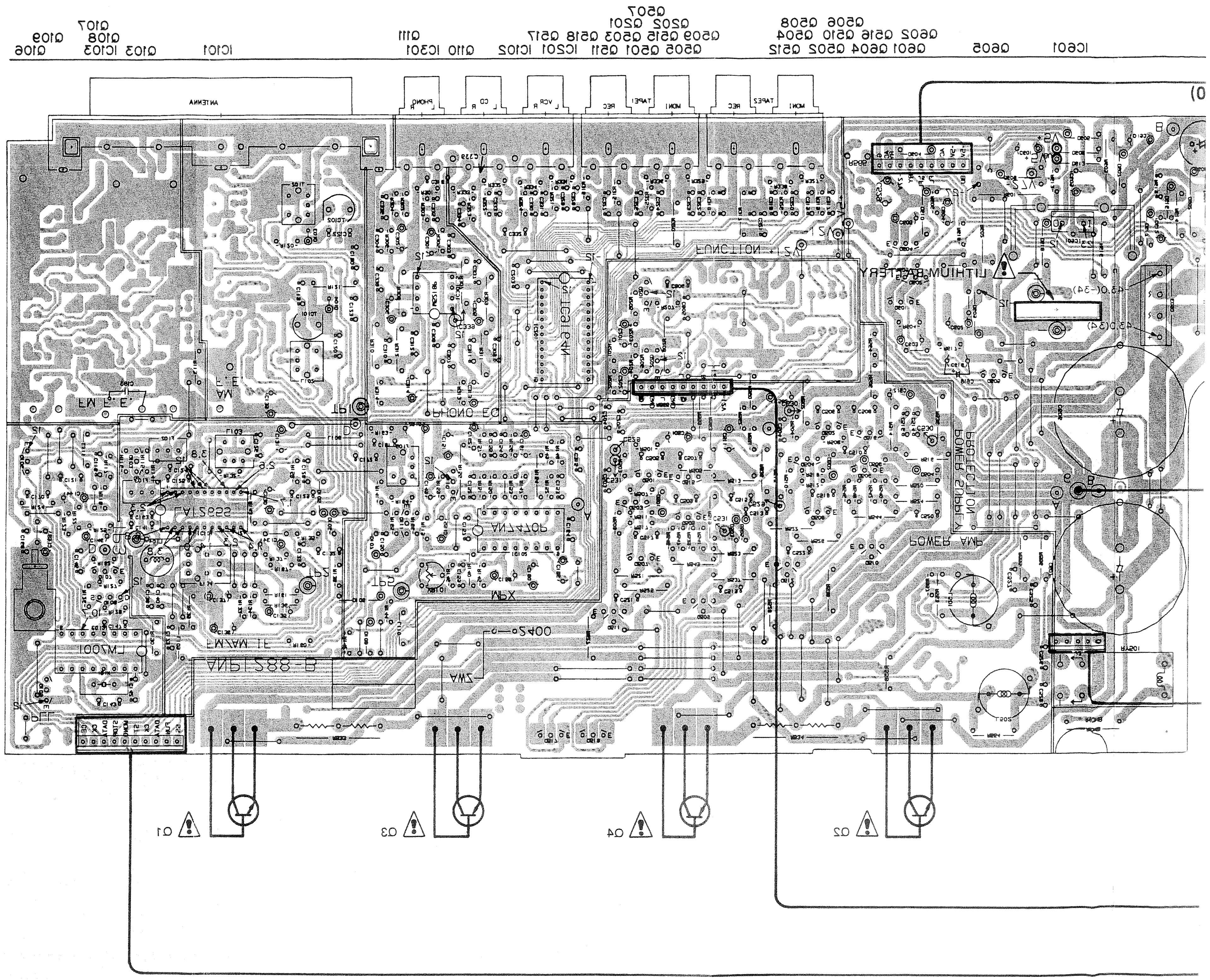
4. 'Stick the line voltage label on the rear panel.

Description	Part No.
220V label	AAX–193
240V label	AAX–192

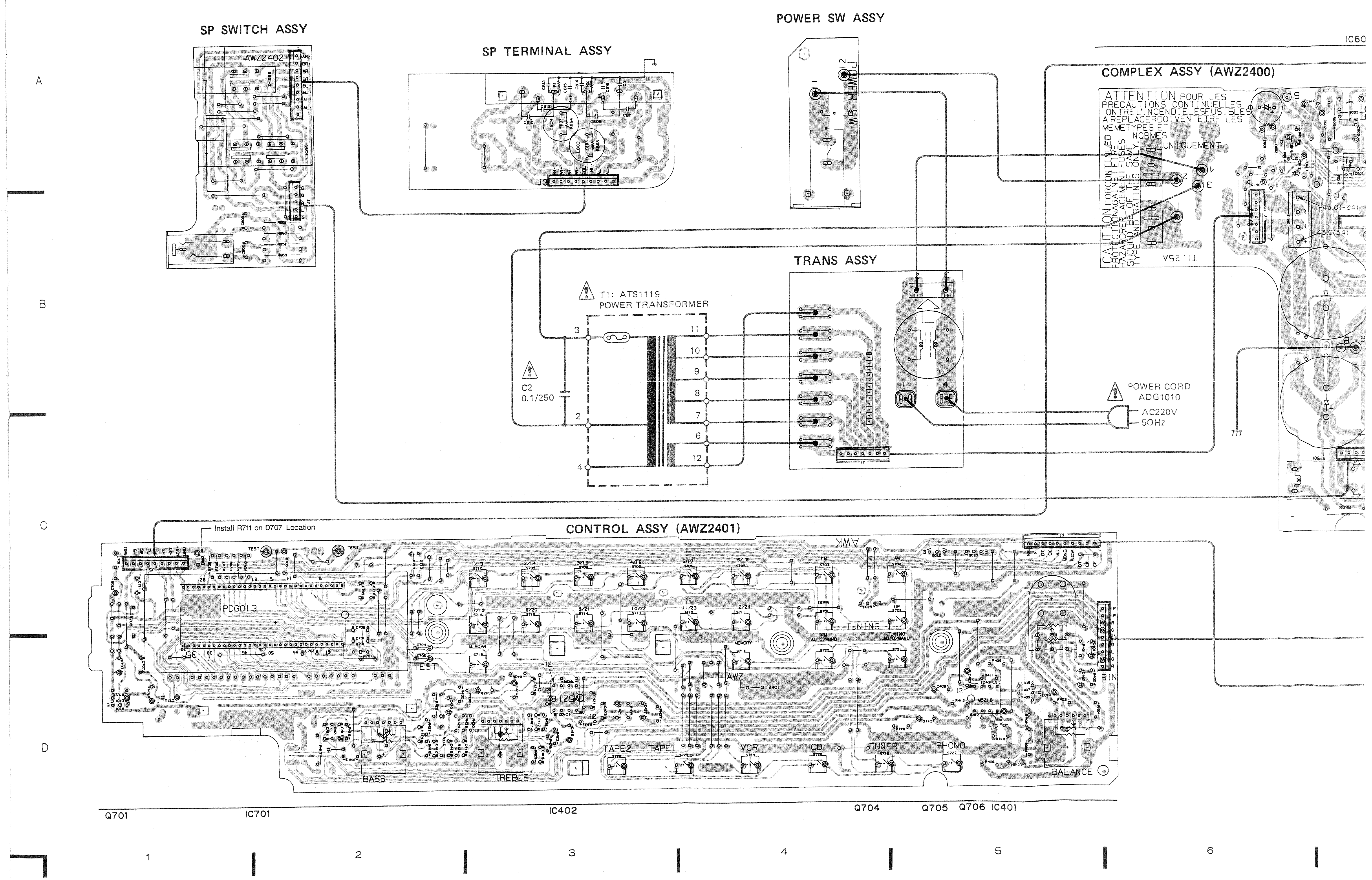


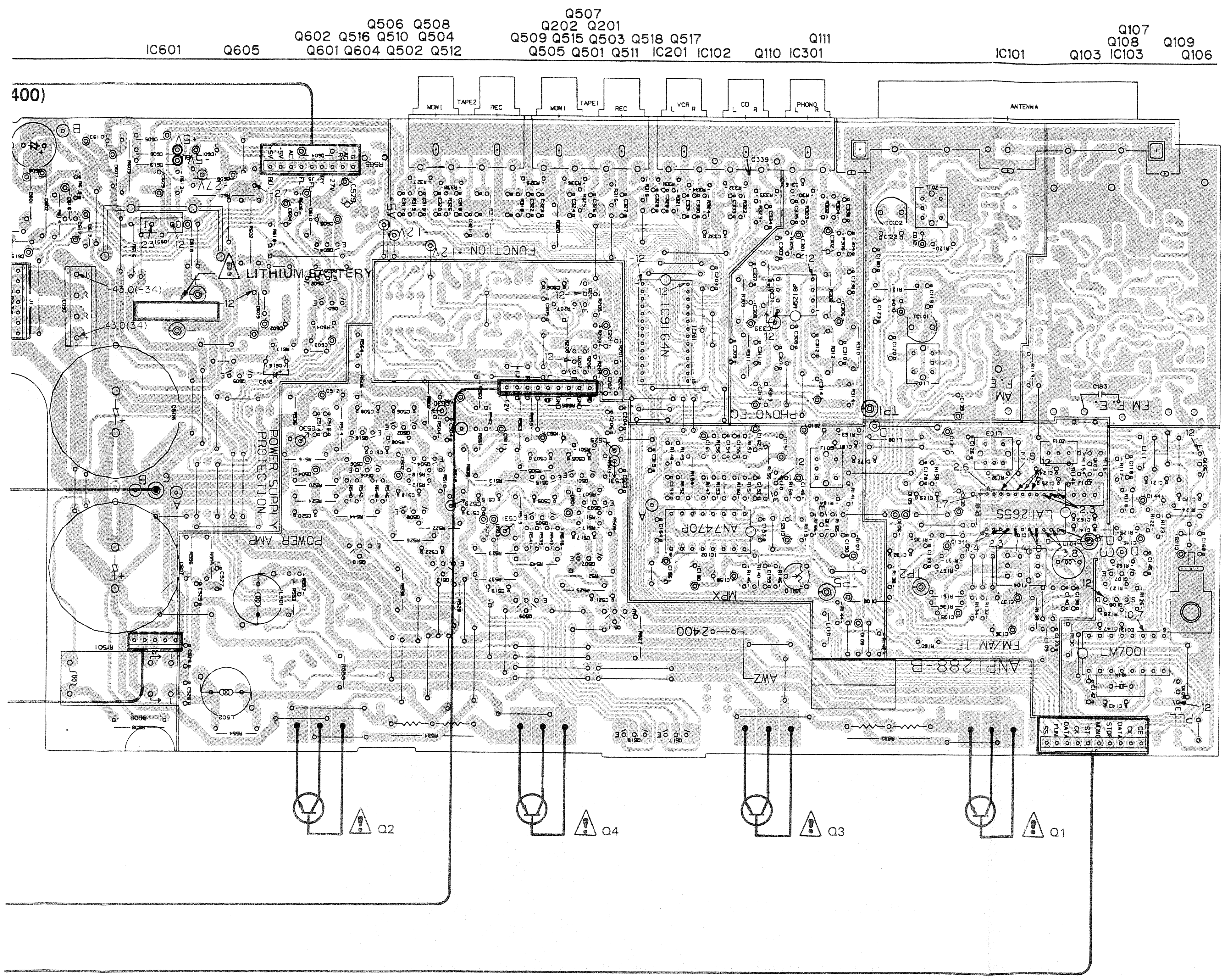
POWER SW ASSY
POWER SW
SP TERMINAL ASSY
SP SWITCH ASSY
AWZ2402
IC601
COMPLEX ASSY (AWZ2400)
ATTENTION POUR LES PRECAUTIONS CONTINUELLES CONTRE L'INCENDIE LES FUSIBLES A REPLACER DOIVENT ETRE LES MEME TYPES ET NORMES UNIQUEMENT
CAUTION FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE
TRANS ASSY
T1: ATS1119
POWER TRANSFORMER
POWER CORD
ADG1010
AC220V
50Hz
C2
0.1/250
11
10
9
8
7
6
12
3
2
4
CONTROL ASSY (AWZ2401)
Install R711 on D707 Location
TEST
TUNING
MEMORY
PHONO
TUNER
CD
VCR
TAPE1
TAPE2
TREBLE
BASS
BALANCE
Q701
IC701
IC402
Q704
Q705
Q706
IC401
1
2
3
4
5
6
A
B
C
D

This P.C. B. connection diagram is viewed from the foil side.


IC101
Q103 IC103
Q108
Q107
Q106
Q109
IC301 Q110
Q111
ANTENNA
PHONO
CD
VCR
TAPE1
TAPE2
FM F.E
AM F.E
PHONO EQ
FUNCTION
LITHIUM BATTERY
POWER SUPPLY PROTECTION
POWER AMP
MPX
FM/AM IF
ANP1288-B
Q1
Q2
Q3
Q4
IC601
Q605

7,3,3 P.C. BOARD CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
SP SWITCH ASSY
AWZ2402
SP TERMINAL ASSY
POWER SW ASSY
POWER SW
COMPLEX ASSY (AWZ2400)
ATTENTION POUR LES PRECAUTIONS CONTINUELLES CONTRE L'INCENDIE LES FUSIBLES A REPLACER DOIVENT ETRE LES MEME TYPES ET NORMES UNIQUEMENT
CAUTION FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACE MENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
T1.25A
43.0(-34)
43.0(34)
TRANS ASSY
T1: ATS1119
POWER TRANSFORMER
C2
0.1/250
POWER CORD
ADG1010
AC220V
50Hz
CONTROL ASSY (AWZ2401)
Install R711 on D707 Location
PDG013
TEST
TUNING
AWZ 2401
BASS
TREBLE
TAPE2
TAPE1
VCR
CD
TUNER
PHONO
BALANCE
Q701
IC701
IC402
Q704
Q705
Q706
IC401
IC60


IC601
Q605
Q602 Q516 Q506 Q508 Q510 Q504
Q601 Q604 Q502 Q512
Q507
Q202 Q201
Q509 Q515 Q503 Q518 Q517
Q505 Q501 Q511 IC201 IC102
Q110 IC301
Q111
IC101
Q103
Q107
Q108
IC103
Q109
Q106
400)
MON1
TAPE2
REC
MON1
TAPE1
REC
VCR
CD
PHONO
ANTENNA
LITHIUM BATTERY
43.0(-34)
43.0(34)
POWER SUPPLY PROTECTION
POWER AMP
FUNCTION
PHONO EQ
TC9164N
AN7470P
MPX
LA1265S
FM/AM IF
ANP1288-B
AWZ
LM7001
TP1
TP2
TP5
FM
AM
PLL
Q2
Q4
Q3
Q1

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

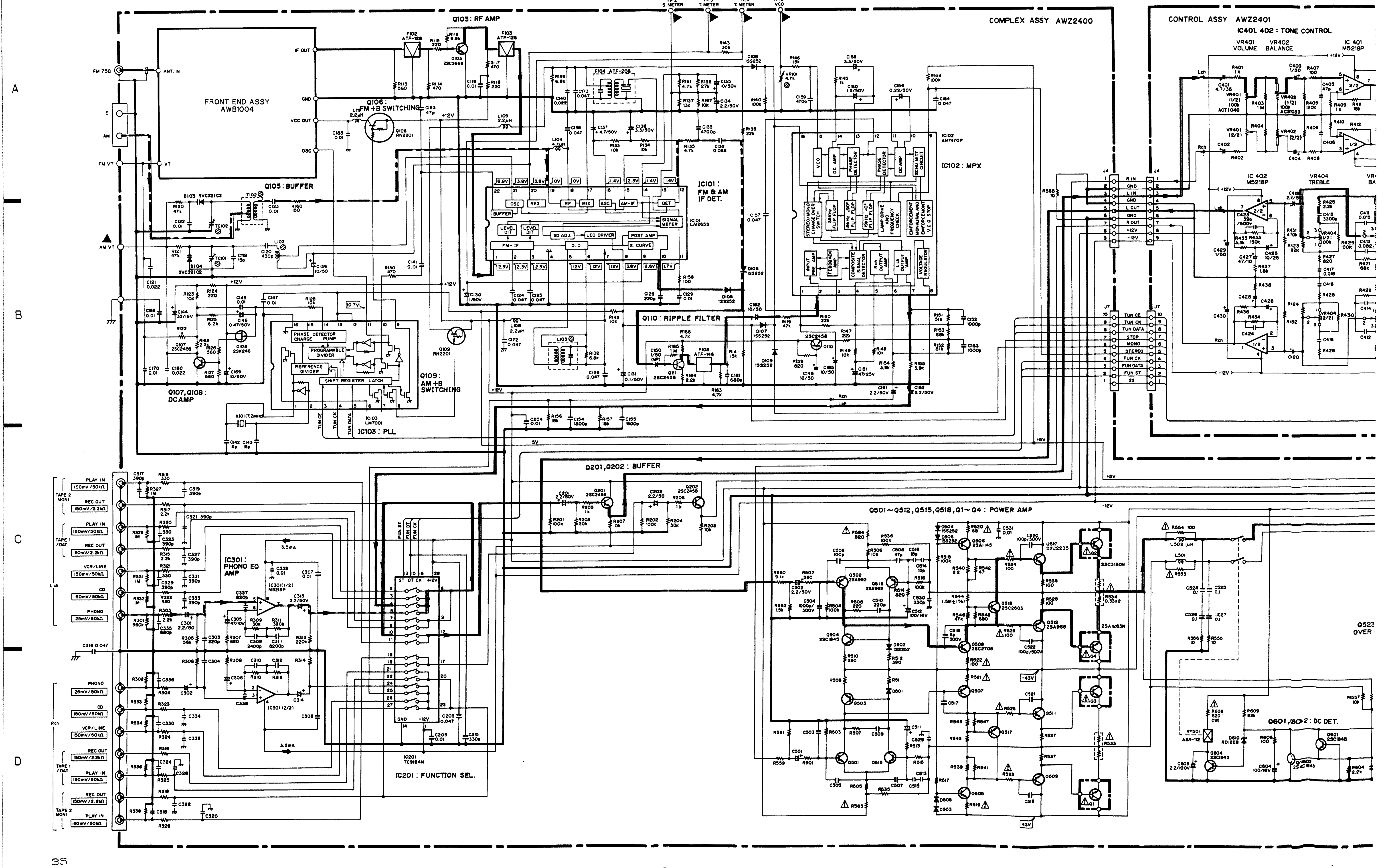
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

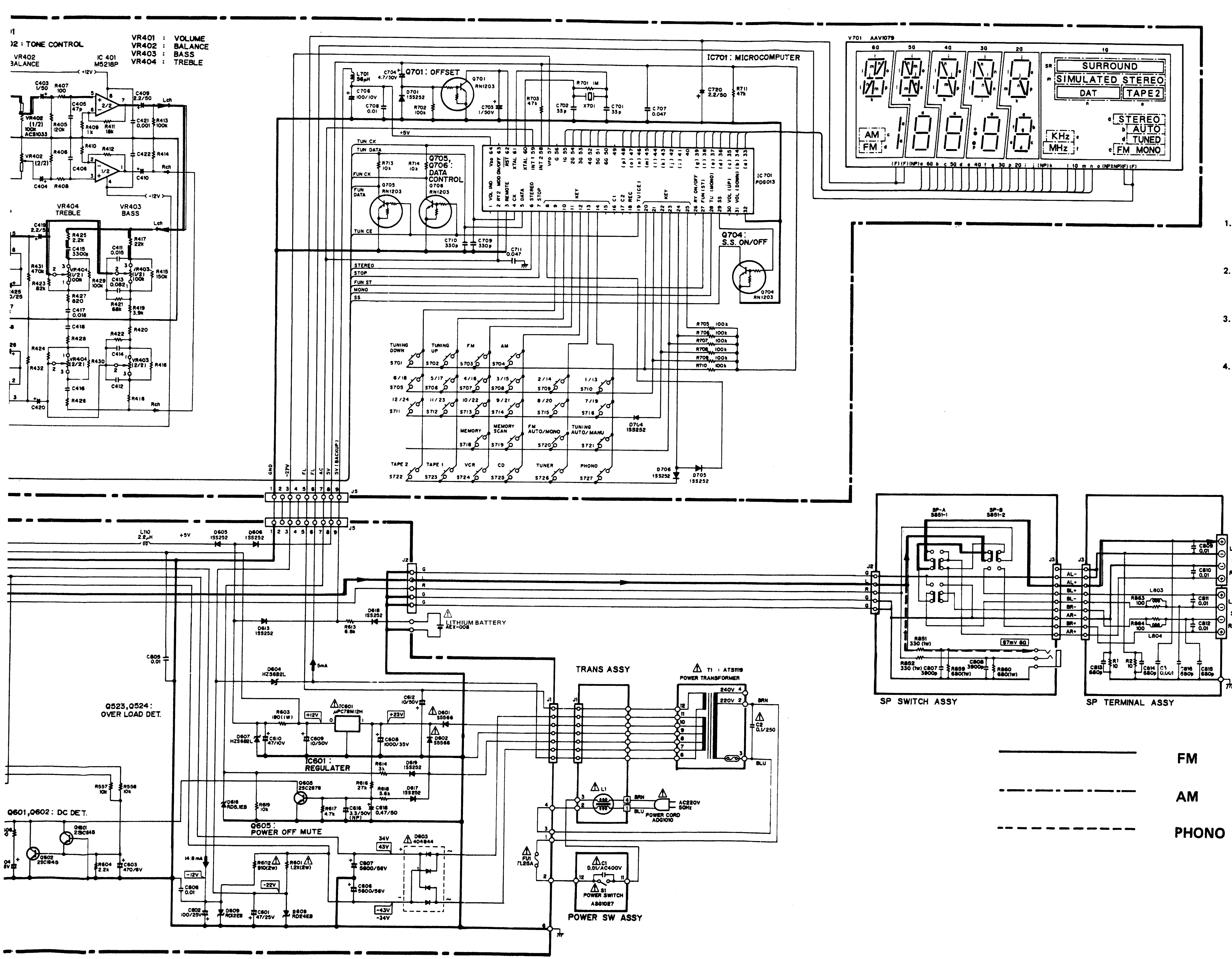
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ◎ (double circles) shows negatine termianl.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

7,3,2 SCHEMATIC DIAGRAM


1
2
3
4
5
6
A
B
C
D
COMPLEX ASSY AWZ2400
CONTROL ASSY AWZ2401
IC401 402 : TONE CONTROL
VR401 VOLUME
VR402 BALANCE
IC 401 M5218P
IC 402 M5218P
VR404 TREBLE
TP.2 S. METER
TP.3 T. METER
TP.4 T. METER
TP.5 VCO
FM 75Ω
E
AM
FM VT
AM VT
FRONT END ASSY AWB1004
ANT. IN
IF OUT
GND
VCC OUT
OSC
VT
Q103 : RF AMP
Q106 : FM +B SWITCHING
Q105 : BUFFER
F102 ATF-126
F103 ATF-126
F104 ATF-208
F105 ATF-146
IC101 : FM & AM IF DET.
IC101 LA1265S
OSC
REG
RF
MIX
AGC
AM-IF
DET
BUFFER
SIGNAL METER
LEVEL DIT
SD ADJ.
LED DRIVER
POST AMP
FM-IF
Q.D
S. CURVE
IC102 AN7470P
IC102 : MPX
VCO
DC AMP
PHASE DETECTOR
SCHMITT CIRCUIT
STEREO/MONO CHANGE OVER SWITCH
38KHz FLIP FLOP
19kHz 90° FLIP FLOP
19kHz 0° FLIP FLOP
LAMP DRIVE AND FREQUENCY CHECK
ENFORCEMENT MONAURAL AND ENFORCEMENT V.C.O. STOP
INPUT PRE AMP
FEEDBACK AMP
COMPOSITE SIGNAL DETECTOR
Rch OUTPUT AMP
Lch OUTPUT AMP
VOLTAGE REGULATOR
Q110 : RIPPLE FILTER
Q107,Q108 : DC AMP
IC103 : PLL
IC103 LM7001
PHASE DETECTOR CHARGE PUMP
PROGRAMMABLE DIVIDER
REFERENCE DIVIDER
SHIFT REGISTER LATCH
X101(7.2MHz)
Q109 : AM +B SWITCHING
TUN CE
TUN CK
TUN DATA
Q201,Q202 : BUFFER
TAPE 2 MONI
TAPE 1 /DAT
Lch
Rch
PLAY IN 150mV/50kΩ
REC OUT 150mV/2.2kΩ
VCR/LINE 150mV/50kΩ
CD 150mV/50kΩ
PHONO 25mV/50kΩ
IC301 : PHONO EQ AMP
IC301(1/2) M5218P
IC301 (2/2)
3.5mA
IC201 : FUNCTION SEL.
IC201 TC9164N
FUN ST
FUN DT
FUN CK
ST DT CK +12V
GND -12V
Q501~Q512, Q515, Q518, Q1~Q4 : POWER AMP
Q601,602 : DC DET.
RY501 ASR-112
L502 1μH
L501
J4
J7
R IN
GND
L IN
L OUT
R OUT
+12V
-12V
TUN CE
TUN CK
TUN DATA
STOP
MONO
STEREO
FUN CK
FUN DATA
FUN ST
SS
+5V
5V
-43V
43V
Q523 OVER


02 : TONE CONTROL
VR401 : VOLUME
VR402 : BALANCE
VR403 : BASS
VR404 : TREBLE
IC 401 M5218P
VR404 TREBLE
VR403 BASS
IC701 : MICROCOMPUTER
IC701 PD6013
Q701 : OFFSET
Q705, Q706 : DATA CONTROL
Q704 : S.S. ON/OFF
V701 AAV1079
SURROUND
SIMULATED STEREO
DAT
TAPE2
STEREO
AUTO
TUNED
FM MONO
AM
FM
KHz
MHz
TUNING DOWN
TUNING UP
FM
AM
MEMORY
MEMORY SCAN
FM AUTO/MONO
TUNING AUTO/MANU
TAPE 2
TAPE 1
VCR
CD
TUNER
PHONO
LITHIUM BATTERY AEX-008
TRANS ASSY
T1 : ATS1119 POWER TRANSFORMER
IC601 : REGULATER
Q523, Q524 : OVER LOAD DET.
Q601, Q602 : DC DET.
Q605 : POWER OFF MUTE
AC220V 50Hz
POWER CORD ADG1010
S1 POWER SWITCH ASG1027
POWER SW ASSY
SP SWITCH ASSY
SP TERMINAL ASSY
SP.A
SP.B

1. RESISTORS:
Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
▭; DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
mA; DC current at no input signal

4. OTHERS:
➡; Signal route.
⊘; Adjusting point.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

——————— FM

-·-·-·-·- AM

- - - - - - - PHONO

7.3 FOR HEZ TYPE

7.3.1 ELECTRICAL PARTS LIST FOR HEZ TYPE

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω 56 × 10¹ 561........................RD1/4PS $\boxed{5}\,\boxed{6}\,\boxed{1}$ *J*
47kΩ 47 × 10³ 473........................RD1/4PS $\boxed{4}\,\boxed{7}\,\boxed{3}$ *J*
0.5Ω 0R5..RN2H $\boxed{0}\,\boxed{R}\,\boxed{5}$ *K*
1Ω 010..RS1P $\boxed{0}\,\boxed{1}\,\boxed{0}$ *K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10¹ 5621........................RN1/4SR $\boxed{5}\,\boxed{6}\,\boxed{2}\,\boxed{1}$ *F*

MISCELLANEOUS PARTS

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	POWER SW ASSY	
	TRANS ASSY	
	COMPLEX ASSY	AWZ2400
	CONTROL ASSY	AWZ2401
	SP SWITCH ASSY	
	SP TERMINAL ASSY	
	FE ASSY	AWB1004

OTHERS

Mark	Symbol & Description		Part No.
⚠	Q3, Q4	Transistor	2SA1263N
⚠	Q1, Q2	Transistor	2SC3180N
⚠	R1, R2	Resistor	RD1/4PMF100J
⚠	C2	Capacitor	ACE-507
	C3	Ceramic capacitor	CKDYB102K50
⚠	T1	Power transformer	ATS1119
		PAL socket	AKX1029
⚠	FU1	Fuse (T1, 25A 250V)	AEK–018
⚠		AC power cord	ADG1010
⚠		Lithium battery	AEX–008

POWER SW ASSY

SWITCH

Mark	Symbol & Description	Part No.
⚠	S1	ASG1027

CAPACITOR

Mark	Symbol & Description	Part No.
⚠	C1	ACG1003

TRANS ASSY

COIL

Mark	Symbol & Description		Part No.
⚠	L1	Line filter	ATF-151

COMPLEX ASSY (AWZ2400)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC102	AN7470P
	IC101	LA125S
	IC103	LM7001
	IC301	M5218P
	IC201	TC9164N
	IC601	µPC78M12H
	Q106, Q109	RN2201
	Q505, Q506	2SA1145
	Q511, Q512	2SA965
	Q501, Q502, Q515, Q516	2SA992
	Q503, Q504, Q601, Q602, Q604	2SC1845
	Q509, Q510	2SC2235
	Q107, Q110, Q111, Q201, Q202	2SC2458
	Q517, Q518	2SC2603
	Q103	2SC2668
	Q507, Q508	2SC2705
	Q605	2SC2878
	Q108	2SK246
	D604, D607	HZS6B2L
	D609, D610	RD12EB
	D608	RD24EB
	D616	RD5.1EB
	D103, D104	SVC321C2
⚠	D601, D602	S5566
	D105–D109, D501–D506, D605, D606, D613, D617–D619	1SS252
⚠	D603	4D4B44

RELAY

Mark	Symbol & Description	Part No.
	RY501	ASR–111

COILS AND TRANSFORMERS

Mark	Symbol & Description		Part No.
	T102	AM antenna transformer	ATB–095
	L102	AM OSC coil	ATB–114
	L103	FM detector coil	ATB–079
	L501, L502	AF choke coil	ATH1009
	L108–L111	Inductor	LAU2R2M
	L104	Inductor	LTA472J
	F102	FM ceramic filter	ATF–107
	F103	FM ceramic filter	ATF–119
	F105	Beat eliminate filter	ATF–146
	F104	AM ceramic filter	ATF–208

CAPACITORS

Mark	Symbol & Description	Part No.
	TC101, TC102	ACM-015
	C617	ACG1005
	C606, C607	ACH1119
	C517, C518	CCCSL050C500
	C519, C520, C522	CCCSL101K500
	C128, C303, C304, C509, C510	CCCSL221J50
	C507, C508	CCCSL470J50
	C119, C142, C143, C513–C516	CCDCH150J50
	C505, C506	CCDSL101J50
	C521	CCDSL101K500
	C163	CCDSL470J50
	C618	CEANPR47M50
	C150	CEANP010M50
	C616	CEANP3R3M50
	C156	CEASR22M50
	C146	CEASR47M50
	C131	CEAS0R1M50
	C130	CEAS010M50
	C160	CEAS1R5M50
	C135, C139, C149, C165, C169, C182, C609, C612	CEAS100M50
	C511, C512, C604	CEAS101M16
	C602	CEAS101M25
	C608	CEAS102M35
	C605	CEAS2R2M100
	C134, C161, C162, C201, C202, C301, C302, C313, C314, C501, C502	CEAS2R2M50
	C136, C158	CEAS3R3M50
	C144	CEAS330M16
	C137	CEAS4R7M50
	C305, C306, C610	CEAS470M10
	C151	CEAS470M25
	C603	CEAS471M6
	C601	CEHAQ470M25
	C525–C528	CFTXA104J50
	C133	CKCYB472K50
	C121, C140	CKCYF223Z50
	C503, C504	CKDYB102K500
	C154, C155	CKDYB182K50
	C315, C529, C530	CKDYB331K50
	C317–C324, C326–C334	CKDYB391K50
	C181, C335, C336	CKDYB681K50
	C337, C338	CKDYB821K50
	C118, C122, C123, C129, C141, C145, C147, C168, C170, C183, C204, C205, C307, C308, C339, C531, C805, C806	CKDYF103Z50
	C180	CKDYF223Z50
	C124, C125, C138, C157, C164, C173, C203, C316	CKDYF473M50
	C126, C172	CKDYX473M25
	C152, C153	CQMA102K50
	C309, C310	CQMA242J50
	C132	CQMA683J50
	C311, C312	CQMA822J50
	C120	CQSA431J50
	C159	CQSA471J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR101	VRTB6VS472
⚠	R533, R534 (0.33 x 2)	ACN-139
	R515, R516	RDR1/4PM104J
	R501, R502, R559–R562	RDR1/6PU□□□J
	R555, R556, R565	RD1/4PMF100J
⚠ ⚠	R519, R520, R527, R528, R537, R538, R553, R554	RD1/4PMF□□□J
⚠	R521–R526	RFA1/4PS101J
	R543, R544	RN1/4PQ1501F
	R603	RS1LMF181J
	R608	RS1LMF821J
	R601	RS2LMF122J
	R602	RS2LMF911J
	R307–R312, R513, R514, R614	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X101 Crystal resonator	ASS1005
	2P antenna terminal	AKA–023
	4P pin jack	AKB1007
	6P pin jack	AKB1024

CONTROL ASSY (AWZ2401)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC401, IC402	M5218P
	IC701	PDG013
	Q701, Q704–Q706	RN1203
	D701, D704–D706	1SS252

SWITCHES

Mark	Symbol & Description	Part No.
	S701–S716, S718–S727	ASG1029

COIL

Mark	Symbol & Description	Part No.
	L701 Inductor	LAU560K

CAPACITOR

Mark	Symbol & Description	Part No.
	C424	CCCSL390K500
	C701, C702	CCDCH330J50
	C423	CCDSL390K500
	C405, C406	CCMSL470J50
	C706	CEAS101M10
	C403, C404, C429, C430, C703	CEJA010M50
	C425, C426	CEJA100M25
	C409, C410, C419, C420, C720	CEJA2R2M50
	C401, C402	CEJA4R7M35
	C704	CEJA4R7M50
	C427, C428	CEJA470M10
	C709, C710	CKDYB331K50
	C708	CKDYF103Z50
	C707	CKDYF473Z50
	C711	CKDYX473M25
	C421, C422	CKMYB102K50
	C411, C412	CQMA153J50
	C417, C418	CQMA183J50
	C415, C416	CQMA332J50
	C413, C414	CQMA823J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR403, VR404	ACS1032
	VR402	ACS1033
	VR401	ACT1040
	R435, R436	RDR1/6PU332J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X701 Ceramic oscillator	ASS1004
	V701 Fluorescent indicator tube	AAV1079

SP SWITCH ASSY

SWITCH

Mark	Symbol & Description	Part No.
	S851	SUL5LXBYS

CAPACITORS

Mark	Symbol & Description	Part No.
	C807, C808	CKDYB392K50

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R851, R852	RS1PMF331J
	R859, R860	RS1PMF681J

OTHERS

Mark	Symbol & Description	Part No.
	Phone jack	AKN1002

SP TERMINAL ASSY

COILS

Mark	Symbol & Description	Part No.
	L803, L804 AF choke coil	ATH–133

CAPACITORS

Mark	Symbol & Description	Part No.
	C813–C816	CKDYB681K50
	C809–C812	CKDYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R863, R864	RD1/4PMF101J

OTHERS

Mark	Symbol & Description	Part No.
	8P speaker terminal	AKE–111

FE ASSY (AWB1004)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q902	2SC2668
	Q905	2SC2786
	Q901, Q903, Q904	2SK241
	D901–D904	1SV147–4

COILS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	T901 FM RF transformer	ATC–194
	T902 FM matching transformer	ATE–063
	L903 FM RF coil	ATC-247
	L901 FM coil	ATC1001
	L904 FM coil	ATC1003
	L902 FM coil	ATC1010
	L905, L906 Inductor	LAU2R2M

CAPACITORS

Mark	Symbol & Description	Part No.
	TC901	ACM-014
	C908	CCDCH010C50
	C909, C910	CCDCH020C50
	C917	CCDCH050C50
	C915	CCDCH080D50
	C913	CCDCH150J50
	C914	CCDCH330J50
	C901	CCDRH100D50
	C905	CCDRH330J50
	C902, C904, C906	CCDRH390J50
	C911	CCDSL101J50
	C916	CCDTH180J50
	C903, C912, C918, C919	CKDYF103Z50
	C907	CKDYF223Z50

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

8. SPECIFICATIONS

Amplifier Section

Continuous Power Output (both channels driven, DIN)	
1 kHz, T.H.D. 1%, 4 Ω	55 W + 55 W
1 kHz, T.H.D. 1%, 8 Ω	45 W + 45 W
40 Hz – 20 kHz, T.H.D. 0.07%, 8 Ω	38 W + 38 W
IEC power output	
63 Hz – 12.5 kHz, T.H.D. 0.7%, 4 Ω	49 W + 49 W
63 Hz – 12.5 kHz, T.H.D. 0.7%, 8 Ω	45 W + 45 W
Dynamic power output	
4/8 Ω	70/55 W
Total Harmonic Distortion*	
1 kHz, 38 W, 8 Ω	0.01%
Input (Sensitivity/Impedance)	
PHONO	2.5 mV/47 kΩ
CD, VCR/LINE, TAPE 1/DAT, TAPE 2	150 mV/22 kΩ
Phono Overload Level (T.H.D. 0.01%, 1,000 Hz)	
PHONO	130 mV
Output (Level/Impedance)	
TAPE REC	150 mV/2,2 kΩ
Frequency Response	
PHONO (RIAA Equalization)	20 Hz to 20,000 Hz ±0.5 dB
CD, VCR/LINE, TAPE 1/DAT, TAPE 2	10 Hz to 70,000 Hz $\pm^{0.5}_{3.0}$dB
Signal-to-Noise Ratio (DIN, continuous power/50 mW)	
PHONO	68 dB/59 dB
CD, VCR/LINE, TAPE 1/DAT, TAPE 2	86 dB/60 dB
Tone control	
BASS	±8dB (100Hz)
TREBLE	±8dB (10kHz)

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	10.8 dBf, IHF (0.95 μV/75 Ω)
50 dB Quieting Sensitivity	
MONO	15.3 dBf (1.6 μV/75 Ω)
STEREO	37.1 dBf (19.5 μV/75 Ω)
Sensitivity (DIN)	
MONO	0.9μV/75 Ω
STEREO	29 μV/75 Ω
Signal-to-Noise Ratio	
MONO	78 dB (at 85 dBf)
STEREO	75 dB (at 85 dBf)
Signal-to-Noise Ratio (DIN)	
MONO	66 dB
STEREO	60 dB
Distortion	
STEREO	0.3% (1 kHz)
Alternate Channel Selectivity	55 dB (400 kHz)
Stereo Separation	35 dB (1 kHz)
Frequency Response	30 Hz to 15 kHz (±1 dB)
Antenna Input	300 Ω balanced, 75 Ω unbalanced

AM Tuner Section

Frequency range	531 kHz to 1,602 kHz
Sensitivity	
IHF, Loop antenna	300 μV/m
Selectivity	20 dB
Signal-to-Noise Ratio	50 dB
Antenna	AM Loop Antenna

Miscellaneous

Power Requirements	a.c. 240 V∼, 50/60 Hz
Power Consumption	250 Watts
Dimensions	420(W) x 120(H) x 337(D) mm
Weight (without package)	6.2 kg (13 lb 11 oz)

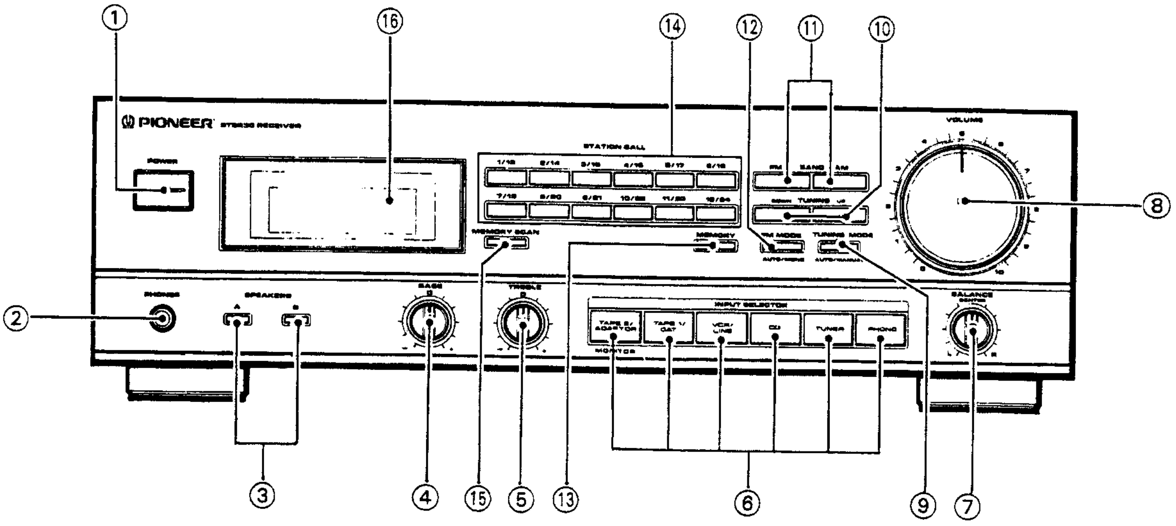
Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Operating Instructions	1

NOTE:
Specifications and design subject to possible modification without notice due to improvements.

*Measured by audio spectrum analyzer.

9. PANEL FACILITIES



① POWER switch

When this switch is pressed, power is supplied to the unit. Press the switch again to turn power off.

② PHONES jack

Connect the plug on your headphones to this jack. To listen to a program through the headphones only, set both SPEAKERS A and B switches to the OFF position.

③ SPEAKERS switches (■OFF, ▪ON)

These are used to select the speaker through which you wish to listen.

A: When the speakers connected to A terminals are in use.

B: When the speakers connected to B terminals are in use.

- Turn both A and B speakers to OFF position when only the headphones are in use.

NOTE:

No sound will be heard through the speakers when both A and B switches are depressed if only one set of speakers has been connected to either A or B SPEAKERS terminals.

④ BASS tone control

Use to adjust the low-frequency tone.

The center position is the "0" (normal) position. When moved to the right, low-frequency tones are emphasized; when moved to the left, low-frequency tones are de-emphasized.

⑤ TREBLE tone control

Use to adjust the high-frequency tone.

The center position is the "0" (normal) position. When moved to the right, high-frequency tones are emphasized; when moved to the left, high-frequency tones are de-emphasized.

⑥ INPUT SELECTOR switches

Use to select playback source.

[TAPE 1/DAT]—Press when listening to tape playback with a cassette deck or digital audio tape deck (DAT).

[VCR/LINE] — Press when listening to programs from a component connected to the VCR/LINE terminals.

[CD] — Press when listening to compact disc playback with a CD player.

[TUNER] — Press when listening to AM or FM broadcasts with a tuner.

[PHONO] — Press when listening to record playback on a turntable.

MONITOR switch

[TAPE 2/ADAPTOR]—Press when listening to tape playback with a cassette deck or when using a graphic equalizer.

⑦ BALANCE control

Should normally be left in the center position. Adjust balance if sound is louder from one of the speakers. If the right side is louder, turn toward the LEFT position and if the left side is louder, turn toward the RIGHT position.

⑧ VOLUME control

Use to adjust volume level.

⑨ TUNING MODE AUTO/MANUAL switch

Works during FM reception.

Use this switch to select either the AUTO mode or the MANUAL mode.

When the "AUTO" indicator is lit, the receiver is in the AUTO mode.

⑩ TUNING switches (DOWN, UP)

UP: The FM or AM band is scanned in the direction of increasing frequency.

DOWN: The FM or AM band is scanned in the direction of decreasing frequency.

⑪ BAND selector switches

These switches are used to select either AM or FM reception.
AM: Push this switch for AM reception.
FM: Push this switch for FM reception.

⑫ FM MODE AUTO/MONO selector switch

Use to select the auto stereo mode or monaural mode when listening to FM broadcasts.

Auto stereo mode:
Normally leave in this mode for reception. When a stereo FM broadcast is received, it will be automatically reproduced in stereo sound.

Monaural mode:
When receiving distant stations or stations with weak broadcast signals, the input signal may be weak, thus resulting in increasing noise during FM stereo broadcasts. In this event, setting the receiver to the monaural mode will reduce the noise. In this case, however, FM stereo broadcasts will be reproduced in monaural sound.
The monaural mode has been selected when the FM MONO indicator is lit.

NOTE:
This switch has no effect on reception of AM broadcasts.

⑬ MEMORY switch

This is used to memorize stations. When the switch is pressed, the frequency indicator will flash. To memorize the frequency of any station, press a STATION CALL switch while the frequency indicator is flashing.

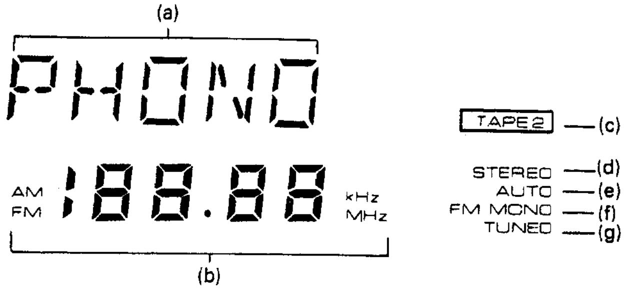
⑭ STATION CALL switches

These switches are used to preset and recall desired broadcasting stations.

⑮ MEMORY SCAN switch

Press this switch to scan the stations in the memory.

⑯ OPERATION DISPLAY panel

(a) Indicates the function selected by the INPUT SELECTOR.
(b) Indicates frequency or channel (STATION CALL number).
(c) Indicates TAPE 2 monitor
(d) FM STEREO indicator
(e) AUTO tuning indicator
(f) FM MONO indicator
(g) TUNED indicator